STSC

Software Test Technologies Report
August 1994

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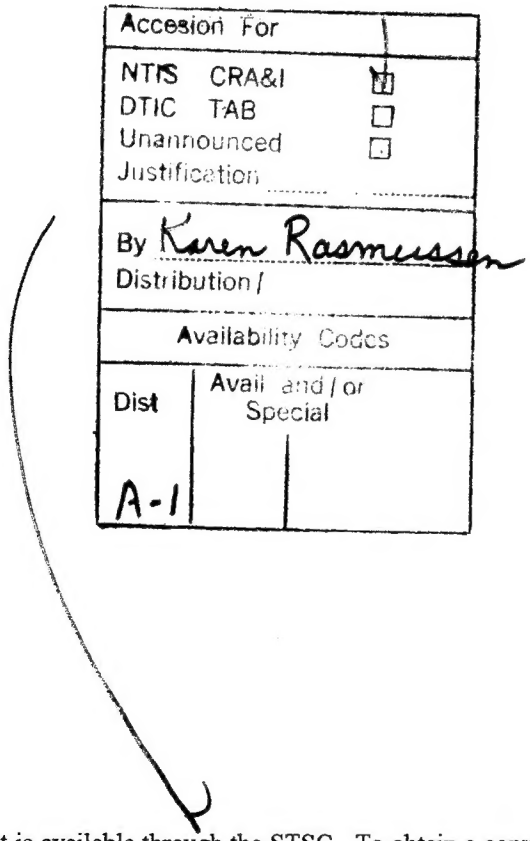

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Preface

The purpose of this report is to increase awareness and understanding of software testing technologies in particular, test preparation, test execution, test evaluation, and source code static analysis tools. Use of this report should be the first step in transferring effective software test processes, methods, and tools into practical use. This report was written for organizations responsible for the development and maintenance of computer software. This report explains how the features of current testing technologies can improve software development and maintenance. It includes information about specific products in the marketplace. The information is aimed at those who must make decisions about acquiring advanced technology and prepare their organizations to use it effectively.

This August 1994 Software Test Technologies Report combines the February 1993 Test Preparation, Execution, and Evaluation [TPEE93] Software Technologies Report and the March 1993 Source Code Static Analysis [SCSA93] Technologies Report (Volumes 1 and 2) and updates those versions by providing

- Updated test tool taxonomy and test technology information.
- Guidance for improving the testing process using the Capability Maturity Model.
- Additional testing tools and updated tool information.
- Improved Product Sheet format that condenses relevant information.
- Removal of redundant information between the TPEE and SCSA reports.
- Updated information about STSC products and services.
- Updated list of conferences and seminars.

Note that the Product Critiques and tool evaluation characteristics (criteria) have been removed from this technology report. Current Product Critiques and evaluation characteristics can be requested from the STSC at any time. This will permit better STSC service and support in the proper use of the information.

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1 Introduction

This report was written to help software development and support activities (SDSA)[1] identify, evaluate, and adopt effective software testing practices and technologies. There are several types of software testing technologies that can potentially improve an organization's ability to test software to find defects and to determine if the software satisfies its requirements. Section 1 introduces the Software Technology Support Center (STSC) and its mission. Section 2 describes some software testing terms and a classification of tools (taxonomy). Section 3 provides additional information about static analysis technologies. Section 4 presents the STSC's method for evaluating and selecting software test tools. Section 5 discusses improving the testing process using the Software Engineering Institute's (SEI) Capability Maturity Model (CMM).

1.1 The Software Technology Support Center

The STSC's mission is to assist Air Force software organizations with identifying, evaluating, and adopting technologies that will improve

- The quality of their software products.
- Their efficiency in producing software.
- Their ability to accurately predict the cost and schedule of software delivery.

A planned approach is necessary for successful transition. In general, transitioning effective practices, processes, and technologies consist of a series of activities or events that occur between the time a person encounters a new idea and the daily use of that idea. Conner and Patterson's Adoption Curve [CONN82], shown in Figure 1-1, illustrates these activities. After encountering a new process or technology, potential customers of that technology increase their awareness of its usage, maturity, and application. If the process or technology is promising, customers try to better understand its strengths, weaknesses, costs, and applications. These first activities in the Adoption Curve take a significant amount of time.

Promising processes and technologies are then evaluated and compared. To reduce risk, customers usually try new processes or technologies on a limited scale through beta tests, case studies, or pilot projects. A customer then adopts processes or technologies that prove effective.

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[1] A Software Development and Support Activity is a DoD or military service organization responsible for the software development or support of a designated Mission-Critical Computer Resource (MCCR). Adaptation is based on [MCCR90].

Finally, refined processes and technologies become essential parts of an organization's daily process (institutionalization).

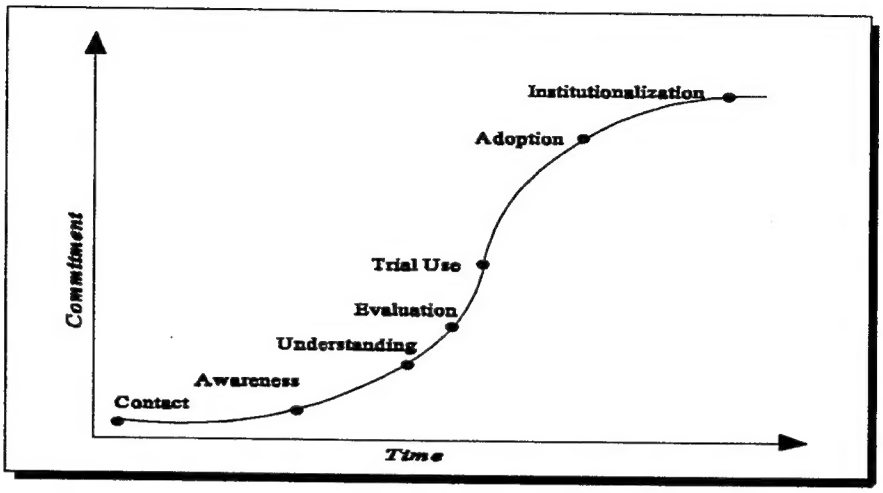

Figure 1-1. Adoption Curve.

Word processors are essential in most organization's daily operations. Yet, 30 years ago they did not exist. The institutionalization of word processors in many organizations followed a series of events similar to those identified in the Adoption Curve.

The STSC is researching and collecting information about technologies that will reduce the time and resources it takes to become aware, understand, evaluate, select, try, and adopt effective practices, processes, and technologies. The STSC has developed the following objectives to accomplish its mission:

- Information Exchange

  Facilitate the exchange of better software business practices, processes, and technologies within the DoD.

- Technology Evaluation

  Identify, classify, and evaluate effective processes and technologies.

- Insertion Projects

  Analyze and improve processes, support the adoption of new methods as needed, evaluate and recommend for selection effective tools, receive and provide appropriate levels of training, and support pilot projects to try out and confirm the technology insertion efforts.

- Technology Champions

  Develop technology champions who can infuse effective process and technology improvements through the use of available STSC, DoD, and industry products, services, and processes.

1.2 STSC Technology Transition Approach

This section describes the STSC's approach to meeting the objectives identified in the previous section.

1.2.1 Information Exchange

This objective involves exposing potential STSC customers to available technologies and, conversely, customer requirements to technology developers. Referring to the Adoption Curve, this objective focuses on contact, awareness, and understanding. STSC products and services that accomplish this objective include *CROSSTALK* (the DoD journal of defense software engineering), the annual Software Technology Conference, specific technology reports, electronic customer services, and introductory workshops.

1.2.1.1 *CROSSTALK*

Over 13,000 software professionals receive *CROSSTALK* monthly. This publication provides a forum for the exchange of ideas. Articles cover leading edge, state-of-the-art, and state-of-the-practice processes and technologies in software engineering.

1.2.1.2 Software Technology Conference

The annual Software Technology Conference is held each April in Salt Lake City, Utah. This conference brings together over 2,400 software professionals from government, industry, and academia to share technology solutions and exchange ideas and information.

1.2.1.3 Technology Reports

STSC technology reports provide awareness and understanding of each topic in preparation for evaluation and selection of corresponding technologies. Over 34,000 of these reports have been distributed. The current list of reports include the following:

- Software Test Technologies Report (this report) .
- Configuration Management [CM94].
- Documentation [DOC94].
- Project Management [PM93].
- Reengineering [RE93].
- Requirements Analysis and Design [RAD94].
- Reuse [REUS94].
- Software Engineering Environments [SEE94].
- Software Estimation [EST93].
- Software Management Guide [SMG93].

The STSC also provides a Metrics Starter Kit [MET94] that helps organizations adopt a measurement program that satisfies the Air Force Software Metrics Policy, 93M-017 [DRUY94].

1.2.1.4 Electronic Customer Services

Along with the services mentioned above, the STSC also provides customers with access to information via Electronic Customer Services (ECS). ECS includes a bulletin board system, which is available to obtain additional information, leave messages, add information, and confer electronically. ECS can be accessed via the INTERNET at address 137.241.33.1 or stscbbs.af.mil or by calling 801-774-6509 with modem at 2400 or 9600 baud, 8 bit word, 1 stop bit, and no parity.

1.2.1.5 STSC Introductory Workshops

Initial visits to potential STSC customers (see Section 1.2.3) can be arranged to introduce STSC products and services to Air Force and other government organizations. The STSC introductory workshops are customized to introduce concepts about specific technologies such as testing, metrics, and program management. An STSC introductory workshop provides valuable input to begin a technology insertion project.

1.2.2 Technology Evaluation

The objective of technology evaluation involves identifying and classifying processes, methods, and technologies that can potentially improve the quality or productivity of software

development and maintenance. Many organizations are so focused on deadlines and customer needs that they lack the resources and time to thoroughly investigate options for improvement, leaving them vulnerable to the marketing hype of software vendors. The STSC has developed the infrastructure to provide information on several types of software development and maintenance technologies. Product critiques, essentially, brief tool evaluations from experienced technology users, are collected and distributed. Quantitative evaluations are detailed and objective evaluations performed as needed by experienced users and potential users. Quantitative evaluations are performed on the most promising tools, methods, or processes using the STSC's evaluation guidelines and practices.

1.2.3 Technology Insertion Projects

STSC technology insertion projects are customer-oriented projects that assist customers in evaluating, selecting, and piloting new processes, methods, and technologies. These projects include process definition, process improvement, methodology insertion, and tool insertion and are often initiated through introductory and customized workshops addressing specific technology areas.

Referring to the Adoption Curve (Figure 1-1), an insertion project helps cement understanding of a process or technology, tailors an evaluation of the process or technology for the customer, and pilots the use of that process or technology with appropriate levels of training. Customers move closer to adoption of the process or technology through hands-on experience. It is important to try out technology improvements in a pilot project to confirm that the technology is appropriate for the organization and that the organization is ready and able to adopt the new technology.

1.2.4 Technology Champions

Fowler and Przybylinski [FOWL88] propose that transitioning new technologies from a developer to a consumer requires an advocate to push the technology and a receptor to pull the technology into an organization. This concept is illustrated in Figure 1-2.

Effective change comes from within the organization. The objective of fostering technology champions is to develop technology receptors within individual Air Force SDSAs. These receptors, technology champions, are trained in the use of the STSC's information, products, and services to enhance their organization's ability to incorporate advanced practices, processes, and technologies.

Referring to the Adoption Curve (Figure 1-1), technology champions complete the trek to institutionalization. Champions that come from within the organization should be politically astute

and aware of internal organizational requirements. They have the highest probability of influencing the adoption and daily use of effective business practices, processes, and technologies.

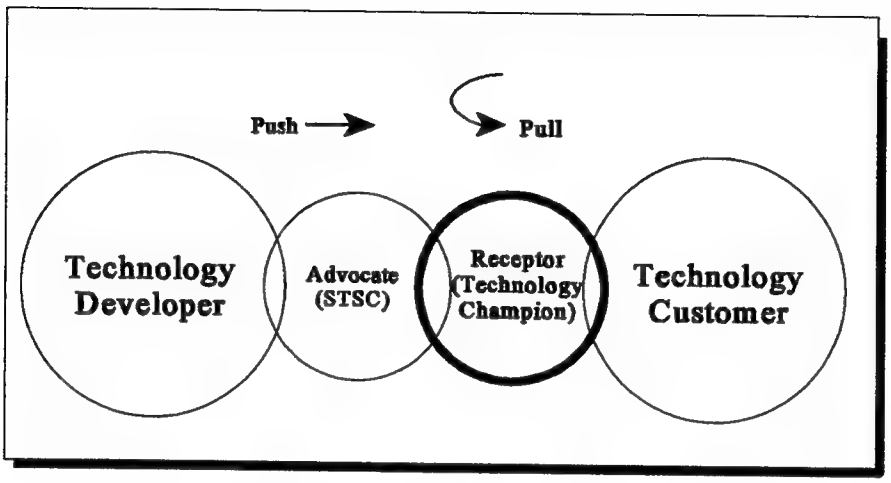

Figure 1-2. Transitioning Technology.

The STSC helps organizations manage their technological change processes by helping them define their strategic and tactical plans. Issues such as management and staff resistance during all improvement phases are addressed using resources from the Software Engineering Institute, etc. Planning for and confronting resistance in an atmosphere of understanding and support will help organizations institutionalize effective processes and tools.

2 Introduction to Software Testing Technologies

The STSC's Test Technologies Group has been researching software testing technologies including practices and tools. The tools include government-owned tools as well as commercial-off-the-shelf (COTS) tools. This report identifies a number of tools that support software testing in typical development and maintenance organizations of the government. Section 2.1 defines important testing terms. Section 2.2 characterizes current practices in software testing. Section 2.3 provides a test tool classification scheme.

2.1 Testing Terminology

Definitions of some commonly used testing terms will help introduce state-of-the-practice software testing technologies. To start with, Bill Hetzel's definition of testing is provided as follows:

> "Testing is any activity aimed at evaluating an attribute or capability of a program or system and determining that it meets its required results" [HETZ88].

This definition advances the concept of testing as a process of executing a program or system with the intent of finding errors [MYER79]. Hetzel suggests that there are many ways to evaluate (or test) a system without executing it. For example, you can test a requirements specification or design document by building test cases based on those specifications or documents. This activity involves testers early on the project and helps correct requirements and design problems before they are coded when they are more expensive to fix. Another point that Hetzel makes is that our intuitive understanding of testing is built on the notion of "measuring" or "evaluating," not trying to find errors. He says, for example, that we don't test students to find out what they don't know, but rather to allow them to demonstrate an acceptable understanding and grasp of the subject matter.

Both views of testing (any evaluation activity and executing code to find errors) are important. In this document, *testing* refers to the act of detecting the presence of faults in code or supporting documentation, or demonstrating their absence by confirming that requirements are met, and is distinguished from debugging where faults are isolated and corrected. This definition of testing, and the following five paragraphs, define several important testing terms and were adapted from a paper entitled, "An Examination of Selected Commercial Software Testing Tools" [IDA92].

An *error* is a mistake made by a software developer. Its manifestation may be a textual problem in the code or documentation called a *fault* or *defect*. A *failure* occurs when an encountered fault prevents software from performing a required function within specified limits.

Four test execution stages are commonly recognized: *unit testing*, *integration testing*, *system testing*, and *acceptance testing*. In unit testing, each program module is tested in isolation, often by the developer. In integration testing, these modules are combined so that successively larger groups of integrated software and hardware modules can be tested. System testing examines an integrated hardware and software system to verify that the system meets its specified requirements. Acceptance testing is generally a select subset of system test cases that formally demonstrates key functionality for final approval and is usually performed after the system is installed at the user's site.

In *bottom-up* testing, the modules at the bottom of the invocation hierarchy are tested independently using *test drivers*, then modules at the next higher level that call these modules are integrated and tested, and so on. *Top-down* testing starts at the highest-level module, with *stubs* replacing the modules it invokes. These stubs are then replaced by the next lower-level modules, with new stubs being provided for the modules that these call, and so on.

Dynamic analysis approaches rely on executing a piece of software to determine if the software functions as expected. This can involve running the software in a special test environment with stubs, drivers, simulators, test data, and other special conditions or running the software in an actual operating environment with real data and real operating conditions. The effectiveness of any dynamic analysis technique is directly related to the test data used. Current tools attempt to detect faults rather than demonstrate the absence of faults. Additionally, most of these tools can only detect faults whose effects propagate to software outputs, unless the software has been specially instrumented to monitor internal data elements (*intrusive*) or special hardware monitors have been attached to the system (*nonintrusive*).

Static analysis refers to the evaluation of software without executing it using automated (tool assisted) and manual mechanisms such as desk-checking, inspections, reviews, and walkthroughs. Static analyzer tools can demonstrate the absence of certain types of defects such as variable typing errors. Static analysis alone cannot detect faults that depend on the underlying operating environment. Consequently, effective testing requires a combination of static and dynamic analysis approaches.

In support of dynamic analysis, different strategies or heuristics can be used to drive test data generation. Commercial automated support is currently available for both *functional* and *structural* strategies. Functional (*black box*) tests are derived from system-level, interface, and unit-level

specifications. Structural (*white box*) tests require knowledge of the source code including program structure, variables, or both. With functional strategies, test data is derived from the program's requirements with no regard to program structure. Functional approaches are language-independent. In structural strategies, test data is derived from the program's structure.

Functional strategies can be applied at all testing levels. System tests can be defined at the requirements analysis phase to test overall software requirements. During the design phase, integration tests can be defined to test design requirements. During the coding phase, unit tests can be defined to test coding requirements.

Figure 2.1 illustrates the software development lifecycle with test development and execution activities. The left side of the figure identifies the specification, design, and coding activities for developing software. It also indicates when the test specification and test design activities can start. For example, the system/acceptance tests can be specified and designed as soon as software requirements are known. The integration tests can be specified and designed as soon as the software design structures are known. And the unit tests can be specified and designed as soon as the code units are prepared.

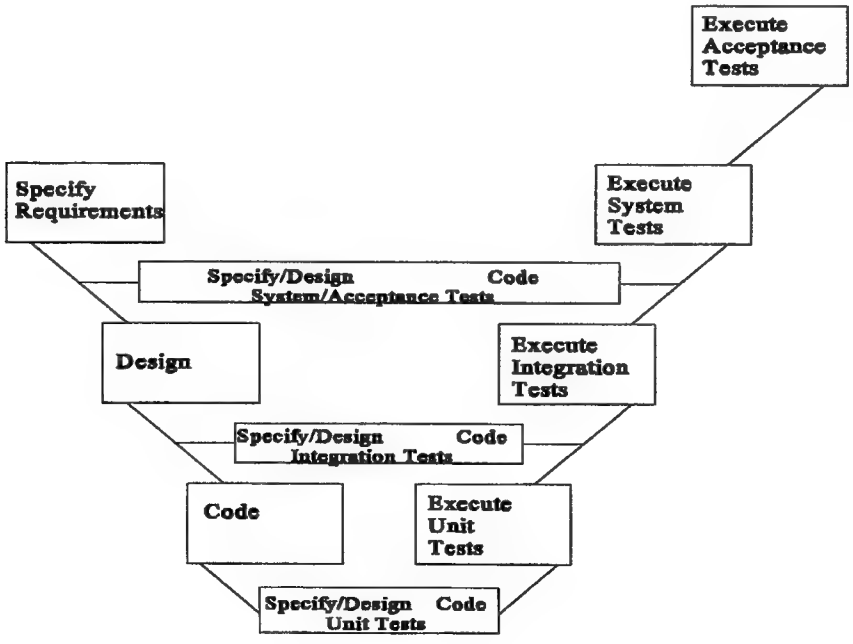

Figure 2-1. Software Development Lifecycle – Modified V Model.

Section 5.3.2.1 suggests that building tests may be the most objective type of testing for requirements and design specifications before code is available to execute. This may also be some of the least expensive testing that we can do. The right side of the figure identifies when the evaluation activities occur that are involved with executing and testing the code at its various stages of evolution.

Requirements-based test case generators create functional test cases by *random*, *algorithmic*, or *heuristic* means that can be applied at all functional test levels. Superior quality test case generators will use all three means. In random or statistical test case generation, the tool chooses input structures and values to form a statistically random distribution. In algorithmic test case generation, the tool follows a set of rules or procedures. Several popular algorithms or methods employed by test case generators include *equivalence class partitioning*, *boundary value analysis*, and *cause-effect graphing*. When generating test cases by *heuristic* or *failure-directed* means, the tool uses information from the tester. Failures that the tester discovered in the past are entered into the tool. The tool uses that history of failures to generate test cases [POST92].

Equivalence class partitioning involves identifying a finite set of representative input values that invoke as many different input conditions as possible [MYER79]. Test cases that exercise boundary conditions usually have a higher payoff than other types of test cases [MYER79]. Building test cases to exercise specific functions supports demonstration of requirements. Regarding cause-effect graphing, causes relate to distinct input conditions, and effects relate to the resulting output conditions or system transformations. Test data is derived from a combinational logic network that represents the logical relationships between causes and effects.

The structural strategies at the unit testing level include *statement coverage*, *branch coverage*, and *path coverage* testing. Statement coverage only detects which statements have been executed and is not considered adequate for structural testing. Branch coverage testing requires each conditional branch statement and the code segment whose execution is controlled by this conditional to be executed at least once. A variation of branch coverage involves exercising all feasible true and false outcomes of each logical component of compounded conditional statements. Path coverage testing requires execution of every path including loops. Path testing is the more stringent strategy but can incur unacceptable computational costs. There are variations of path coverage testing that require basis paths be executed (see [MCCA89] for a complete discussion of basis paths) or that require at least one loop iteration be executed for all loops in addition to all conditionals. A

structural coverage strategy at the integration level requires that each pair of module invocations be executed at least once.

Prototyping is becoming more widely accepted and implemented as an iterative development activity on many projects. The use of this technique is being accelerated by the availability of more automated tools that enable quicker and easier prototyping of system components. Prototyping evaluates (tests) requirements specifications at the conceptualization phase or the requirements analysis phase and can save a considerable amount of development time when properly managed.

Verification is defined by the MIL-STD-2167A as "the process of evaluating the products of a given software development activity to determine correctness and consistency with respect to the products and standards provided as input to that activity" [216788]. Verification is a testing activity that occurs at all lifecycle phases using the inputs of a phase to evaluate the products of that phase. *Validation* is defined by the MIL-STD-2167A as: "the process of evaluating software to determine compliance with specified requirements" [216788]. Validation ensures that software meets the requirements as specified at all requirements definition phases, i.e., phases that define system requirements, software requirements, design requirements, and coding requirements.

2.2 Software Testing: Current Practices

Many organizations approach software testing with the same practices and tools they used 10 or more years ago. This was evident in a survey conducted by Software Quality Engineering, Inc. of leading software organizations [SOFT90]. While many recommended testing practices are more than 10 years old, there is more tool support available for testing software in today's market. Organizations should regularly review their testing practices and industry practices for potential opportunities for improvement.

Test development, execution, and analysis is still labor-intensive like most development activities. Testing can consume over 50 percent of software development costs (note that testing costs should not include debugging and rework costs). In one particular case, NASA's Apollo program, 80 percent of the total software development effort was incurred by testing [DUNN84]. In general, schedule pressure limits the amount of testing that can be performed. Furthermore, defects frequently lead to failure of operational software. Barry Boehm tells us that 3 to 10 failures per thousand lines of code (KLOC) are typical for commercial software, and 1 to 3 failures per KLOC are typical for industrial software [BOEH88]. With a rate of 0.01 failures per KLOC for its shuttle

code, however, NASA has demonstrated that lower defect counts can be achieved [HEND94]. The cost of correcting defects increases as software development progresses for example, the cost of fixing a requirements fault during operation can be 60 to 100 times the cost of fixing that same fault during early development stages [PRES87]. Consequently, timely defect detection is important.

Improved practices and automated tools can reduce testing costs. In addition to eliminating some repetitive manual tasks, tools can promote effective dynamic analysis by guiding the selection of test data and monitoring test executions. Through capturing and reporting data gathered during the performance of testing activities, tools also support quantitative process measurement that is necessary for controlling the testing process. Benefits claimed by some of the tools discussed later include[2]

- A coverage analyzer tool that has saved a developer $15,000 or more per KLOC.
- A requirements-based test case generator that has given clients an 8:1 reduction in test development effort, and one client has achieved a reduction from 1.3 to 0.072 failures per KLOC.

Of course, testing tools are not the only mechanism for improving software quality, reliability, and productivity. Software inspections, for example, have been reported to find 60 to 90 percent of software defects, while reducing total development costs by as much as 25 percent [FAGA86].

2.3 Software Test Tool Classification

The STSC has been collecting information from several sources on classifying test tools. This information is being used to help identify, evaluate, and select software test tools. The following books or articles have contributed to STSC's Test Tool Classification Scheme:

- Evaluation and Validation (E&V) Reference Manual [CLAR91].
- A Complete Guide to Software Testing [HETZ88].
- Testing Tools Reference Guide [DURA93].
- CAST Report [GRAH93].
- A Complete Toolkit for the Software Tester [POST92].

[2]Tool names are omitted since these claims have been neither validated nor invalidated.

- Software Testing and Evaluation [DEMI87].
- An Examination of Selected Commercial Software Testing Tools: 1992 [IDA92].

The STSC Test Tool Classification Scheme is primarily based on the *E&V Reference Manual*, which contains a wealth of information about development functions, maintenance functions, and quality attributes for evaluating Ada Programming Support Environments (APSEs). This information is relevant to many development environments besides Ada and identifies lifecycle functions required for development and maintenance using the MIL-STD-2167A.

Some popular terms for software development and maintenance tools such as Computer-Aided Software Engineering (CASE) and Computer-Aided Software Testing (CAST) have evolved over the last few years. Unfortunately, these terms have caused some confusion because they can be interpreted to mean that *any* software tool that supports a software engineering function, such as a compiler, is a CASE tool. Equally, *any* software tool that supports testing, such as a timing analyzer, can be considered a CAST tool. No attempt is made in this report to limit the scope of tools that these terms address. However, as the industry moves toward building Software Engineering Environments (SEEs) or APSEs, the CASE and CAST tools of particular interest and importance are those that can integrate development and testing lifecycle activities or perform multiple related functions within a lifecycle activity.

Some testing tools perform more than one testing function or support more than one lifecycle activity. Since vendors package various capabilities within their tool sets, the same tool can appear under several tool classifications. Multiple classifications are used in tool catalogs such as the *Testing Tools Reference Guide* [DURA93]. The important point here is that software engineers need to be able to find tools that perform the required functions.

The STSC tries to find tools that support all functions in all lifecycle phases of development or maintenance for most major platforms. However, some tools may provide a specific capability, but not be listed under that corresponding tool type. The tool should be recognized by the industry as that specific type of tool. Classification of tools can be very difficult given the variety of published test tool hierarchies, the number and "flavor" of tools in the market, and the terminology used to describe them. The STSC classification scheme is not intended to be complete, nor is it intended to conflict with other schemes. As new technologies emerge and are made commercially available, new

types will be added. Lists of tool characteristics are then provided to help customers focus their testing requirements and help them find the right tools.

The industry has accepted the notion of testing at all lifecycle phases. The testing activities may be called by different names but for the purposes of grasping the extent of the role of testing throughout the software lifecycle, all tools that perform a test support or evaluation role are categorized as testing tools. For example, test planning is an essential element of the testing role although it doesn't directly produce test results in and of itself. Testing activities can be initially classified under three major headings:

- Test resource management.
- Testing at requirements analysis and design phases.
- Testing at implementation and maintenance phases.

Figure 2-2 presents the STSC Test Tool Classification Scheme. This classification scheme is not intended to dictate how organizations should classify test tools but rather provides a starting point from which to discuss automated testing capabilities. Tools that manage test resources and several types of tools that support testing at the requirements analysis and design phases are discussed in other STSC technology reports (references are provided below).

This report focuses on software test tools that support the implementation and maintenance phases and, more particularly, those that support source code static analysis, test preparation, test execution, and test evaluation of the actual software system at the unit, integration, system, and acceptance testing levels. Note that requirements-based test case generators and test planners appear under two major headings. This was done to recognize the important role that these tools play during the requirements analysis and design phases and during the implementation and maintenance phases.

2.3.1 Test Resource Management Tools

Management of testing resources is required at all lifecycle phases. The following paragraphs describe several types of test resource managers:

Test Resource Management Tools (Section 2.3.1)
- Configuration Managers
- Project Managers

Requirements and Design Test Support Tools (Section 2.3.2)
- Analyzers for Software Plans, Requirements, and Designs
- System/Prototype Simulators
- Requirements Tracers
- Requirements-Based Test Case Generators
- Test Planners

Implementation and Maintenance Test Support Tools (Section 2.3.3)
- Compilers
- Source Code Static Analyzers
  - Auditors
  - Complexity Measurers
  - Cross Referencing Tools
  - Size Measurers
  - Structure Checkers
  - Syntax and Semantics Analyzers
- Test Preparation Tools
  - Data Extractors
  - Requirements-Based Test Case Generators
  - Test Data Generators
  - Test Planners
- Test Execution Tools (Dynamic Analyzers)
  - Assertion Analyzers
  - Capture-Replay Tools
  - Coverage/Frequency Analyzers
  - Debuggers
  - Emulators
  - Network Analyzers
  - Performance/Timing Analyzers
  - Run-Time Error Checkers
  - Simulators
  - Status Displayer/Session Documenters
  - Test Execution Managers
  - Validation Suites
- Test Evaluators
  - Comparators
  - Data Reducers and Analyzers
  - Defect/Change Trackers

Figure 2-2. STSC Test Tool Classification Scheme.

a. *Configuration managers* monitor and control the effects of changes throughout development and maintenance and preserve the integrity of released and developed versions. Change control of software and test documentation (including test plans, test requirements, test procedures, and test cases) must be carefully managed. Configuration managers can be some of your most powerful testing tools. Code version retrieval, defect tracking, change request management, and code change monitoring capabilities are typical features of configuration

management systems. Configuration management technologies are analyzed and published in the *Configuration Management Technologies Report* [CM94].

b. *Project managers* help managers plan and track the development and maintenance of systems. These tools document the estimates, schedules, resource requirements, and progress of all project activities. Test planning activities are often neglected, delayed, or impacted by delays in early lifecycle phases. Project managers can elevate the role of testing in a project with management's documented commitment (see Section 5, Improving the Testing Process Using the Capability Maturity Model, for more information on this subject). Project management technologies are analyzed in the *Project Management Technologies Report* [PM93].

2.3.2 Requirements and Design Test Support Tools

It is widely acknowledged that testing must be considered at both the requirements analysis and design phases. Software requirements and design information provide primary input to define test requirements and prepare the test plans. CASE tools that support the requirements analysis and design phases are often called Upper-CASE tools. The following paragraphs describe several requirements and design test support tools:

a. *Analyzers for software plans, requirements, and designs* evaluate the specifications for consistency, completeness, and conformance to established specification standards. These tools are reviewed in the *Requirements Analysis and Design Technologies Report* [RAD94].

b. *System/Prototype simulators* merge analysis and design activities with testing. Requirements are refined while obtaining rapid feedback of analysis and design decisions. Requirements can be initially validated, altered, or canceled by demonstrating critical system functions much quicker than is possible under normal full-scale development.

   Prototyping tools allow more efficient consideration of design alternatives, evaluation of user interfaces, and feasibility testing of complex algorithms. Prototyping must be carefully monitored and controlled to ensure that appropriate full-scale-development objectives are considered. Otherwise, prototyping can result in ad hoc development with no documentation. It is anticipated that prototype simulators will be reviewed, and a report will be written as STSC customer interest prescribes.

c. *Requirements tracers* can significantly reduce the work effort of tracing requirements to associated design information, source code, and test cases for large projects. These tools provide links between requirements and design, code, and test cases. What has normally been a lengthy, manual process can be significantly automated using these tools. Requirements tracers are reviewed in the *Requirements Analysis and Design Technologies Report* [RAD94].

d. *Requirements-based test case generators* can help developers evaluate requirements and design information during the requirements analysis, design, and code phases. Early consideration of the types of test cases that a tool builds encourages developers to improve requirements and designs to pass those kinds of tests. See Section 2.3.3.b for more information.

e. *Test planners* assist developers in planning and defining acceptance, system, integration, and unit-level tests. Test cases (including test inputs, expected results, and test procedures) should be defined and designed early in the development lifecycle to help prevent errors. See Section 2.3.3.b for more information.

2.3.3 Implementation and Maintenance Test Support Tools

Some CASE tool vendors advertise full lifecycle support because they provide consistency and completeness checking of the requirements and design specifications, some of which offer no testing support at the implementation and maintenance phases. This has increased development time because unit, integration, and system-level testing needs were not properly considered at the requirements analysis and design phases [SIEG91]. Note that some of these types of tools are built in-house and then discarded (or adapted for other projects) after use. The following paragraphs describe implementation and maintenance test support tools:

a. *Compilers* are not generally considered testing tools, even though testing source code is a major function of these tools. It is anticipated that compilers (particularly Ada compilers) will be reviewed, and a report will be written as STSC customer interest prescribes.

b. *Source code static analyzers* examine source code without executing it. Static analyzers extend the analysis performed by compilers. Various kinds of static analysis tools are available. See Section 3 for more information on static analysis technologies.

(1) *Auditors* analyze code to ensure conformance to established rules and standards. Typical rules and practices include adherence to structured design and coding constructs, use of portable language subsets, or use of a standard coding format [DEMI87].

(2) *Complexity measurers* compute metrics from the source code to determine various complexity attributes associated with the source code or designs written in a program design language (PDL). This is accomplished by evaluating program characteristics such as control flow, operands/operators, data, and system structure.

(3) *Cross referencing tools* provide referencing between various entities. Some of these tools provide a comprehensive on-line cross-referencing capability. Some of the types of data that cross referencing tools provide include cross indexes of statement label, data name, literal usage, and intersubroutine calls.

(4) *Size measurers* count source lines of code (SLOC). SLOC counting tools typically provide counts for comments, executable lines, semicolons, declarations, total lines, etc. Some of these tools automatically collect code information and provide historical databases that track code growth, changes, and trends.

(5) *Structure checkers* identify some structure anomalies and portray the structure of the source code through graphics or text. Examples of typical charts that are produced are di-graphs (directed graphs), structure charts, data flow diagrams, flowcharts, and call trees. Note that the static data flow and static path flow analyzer tool types

identified in [TPEE93] and [SCSA93] have been included with structure checkers to simplify the classification scheme in this report.

(6) *Syntax and semantics analyzers* have been traditionally called static analyzers. Compilers perform these functions but usually with limited scope. FORTRAN syntax and semantic analyzers are often needed to identify type conflicts in calling arguments of separately compiled subroutines. Ada compilers do not have this problem due to the characteristics of the Ada language. Other syntax and semantic analyzers (such as UNIX lint) identify unused variables.

Appendix A.3 contains lists of source code static analyzers.

c. *Test preparation tools* include tools that prepare test data or test case information that may require various levels of follow-on formatting. Also included with the test preparation tools are the test planners.

(1) *Data extractors* build test data from existing databases or test sets. Call the STSC for a current list of data extractors.

(2) *Requirements-based test case generators* help developers evaluate code requirements by building test cases from requirements written following the rules of the tool's formal specification language. (See Sections 2.1 and 2.3.2.d for more information.) Appendix A.3 contains a list of requirements-based test case generators.

(3) *Test data generators* build test inputs that are formatted (or can be readily formatted) in the required files. Some test data generators build statistically random distributed test data sets. (See Section 2.1 for more information.) Call the STSC for a current list of test data generators.

(4) *Test planners* assist developers in planning and defining tests. (See Section 2.3.2.e for more information.) Call the STSC for a current list of test planners.

d. *Test execution tools* dynamically analyze the software to be tested.

(1) *Assertion analyzers* instrument the code with logical expressions that specify conditions or relations among the program variables. Call the STSC for a current list of assertion analyzers.

(2) *Capture-replay tools* automatically record test inputs (capture scripts) and replay those test inputs (playback scripts) in subsequent tests after code changes. These tools can dramatically improve tester productivity. Some of these tools can fully automate regression testing when combined with the capability to automatically compare previous results with current outputs. Many communications programs (e.g., PROCOMM PLUS) provide scripting capabilities that could support some testing activities such as capture of test sequences. (These tools were not included because testing was not an advertised function.) Appendix A.3 contains a list of capture-replay tools.

(3) *Coverage/frequency analyzers* assess the coverage of test cases with respect to executed statements, branches, paths or modules. These tools generally require instrumentation of the code to be able to monitor coverage; that is, special code is

added to monitor the execution paths. (See Section 2.1 for more information.) Appendix A.3 contains a list of coverage/frequency analyzers.

(4) *Debuggers* often directly support the testing effort even though their prime intent is to locate errors resulting from testing. Some debuggers have coverage analysis capabilities that directly support testing. Debuggers can be used to perform various low-level testing functions and are the only test execution tools that some organizations have. Contact the STSC for a current list of debuggers.

(5) *Emulators* may be used in place of missing or unavailable system components. Emulators are generally hardware simulations of various system components that usually operate at the real-time speed of the components being emulated. Terminal emulation is a capability commonly found in communications tools, some of which may be used for testing software. Emulation is usually done for economic or safety reasons. Either the emulated components are not yet available or they are too expensive to waste by permitting some destructive functions to be tested. Call the STSC for a current list of emulators.

(6) *Network analyzers* are a special class of testing tools that draw upon the technologies of several other types of tools. These tools have the capability to analyze the traffic on the network to identify problem areas and conditions. These analyzers often allow you to simulate the activities of multiple terminals. Call the STSC for a current list of network analyzers.

(7) *Performance/timing analyzers* monitor timing characteristics of software components or entire systems. Appendix A.3 contains a list of performance/timing analyzers.

(8) *Run-time error checkers* monitor programs for memory referencing, memory leaking (using memory outside program space), or memory allocation errors. These tools may also automatically monitor the use of stacks and queues. Appendix A.3 contains a list of run-time error checkers.

(9) *Simulators* are used in place of missing or unavailable system components. Simulators are generally software implementations of hardware components in which only the necessary characteristics are simulated in software. Example types of simulators include environmental, functional, and instruction simulators. Like emulation, simulation is also done for economic or safety reasons. Call the STSC for a current list of simulators.

(10) *Status displayers/session documenters* provide test status information and record selected information about a test run. Call the STSC for a current list of status displayers/session documenters.

(11) *Test execution managers* are a general classification of test tools that automate various functions of setting up test runs, performing a variety of tests, and cleaning up after a test to reset the system. Test execution managers perform many of the same functions as capture-replay tools by automatically executing test cases using scripts and sets of input files. Test execution managers additionally maintain a test results history. This category includes tools that have been termed *test drivers*, *test harnesses*, and *test executives*. Appendix A.3 contains a list of test execution managers.

(12) *Validation suites* validate software against a well-defined standard such as the Ada coding standard ANSI/MIL-STD-1815A, 12 Jan 83, and are often used with compilers and operating systems. Call the STSC for a current list of validation suites.

e. *Test evaluators* include a variety of off-the-shelf and system specific tools that perform time-consuming, error-prone, and boring functions.

(1) *Comparators* compare entities with each other after a software test and note the differences. Capture-replay tools often provide a dynamic comparison capability, which compares entities while the software is under test. Appendix A.3 contains a list of comparators.

(2) *Data reducers and analyzers* convert data to a form that can be more readily interpreted and can sometimes perform various statistical analyzes on the data. Key information can be extracted from execution logs to determine correctness or appropriateness of system behavior [CLAR91]. Call the STSC for a current list of data reducers and analyzers.

(3) *Defect/Change Trackers* keep track of error information and generate error reports. Accounting for requirements and design errors should be considered in these tools. defect/change trackers are often part of configuration management systems, (see Section 2.3.1.a). Also, they can be integrated in Software Engineering Environments to automatically keep track of error information, saving engineers and managers considerable error reporting time. Refer to the *Software Engineering Environments Report* [SEE94] for more information about integrating defect tracking into an SEE. Appendix A.3 contains a list of defect/change trackers.

3 Static Analysis Technologies

A group of testers from the Institute of Defense Analysis identified several static analysis techniques in their paper, *SDS Software Testing and Evaluation: A Review of the State of the Art in Software Testing and Evaluation with Recommended R&D Tasks* [YOUN89]. These techniques complement the static analysis functions listed in the *E&V Reference Manual*. Christine Youngblut categorized the static analysis techniques into four groups:

> "The first group consists of those techniques which produce general information about a program, for example, symbol cross-referencers, rather than search for actual faults. These are relatively common and often provided by a compiler. The second group, static error analysis ... techniques, are designed to detect specific classes of faults or anomalous constructs ... . While some types of static error analysis can be automated, others are restricted to manual application. In contrast, the third group, symbolic evaluation techniques, are entirely automated. The final group consists of manual review techniques, namely code inspections and structured walkthroughs" [YOUN89].

These four techniques can be generally grouped into manual analysis and automated (tool assisted) analysis techniques. Note that the automated tools can be vendor supplied (commercial-off-the-shelf) or can be developed for a specific project. This report reviews several types of source code static analysis technologies.

3.1 Manual Static Analysis

Manual static analysis consists of *inspections, reviews* (formal and informal), *walkthroughs*, and *desk checking*. Watts Humphrey, the originator of the Software Engineering Institute's Software Process Maturity Model, expresses the importance of inspections:

> "Software inspections provide a powerful way to improve the quality and productivity of the software process ... . Since we tend not to see evidence that conflicts with our strongly held beliefs, our ability to find errors in our own work is impaired. Because of this tendency, many programming organizations have established independent test groups that specialize in finding problems. Similar principles have led to software inspections. With large-scale complex programs, a brief inspection by competent co-workers invariably turns up mistakes the programmers could not have found by themselves" [HUMP90].

Tom Gilb points out that there are significant differences between inspections, walkthroughs, and reviews.

> "Reviews and walkthroughs are typically peer group discussion activities – without much focus on defect identification and correction ... . Walkthroughs are generally a training process, and focus on learning about a single document. Reviews focus

> more on consensus and buy-in to a particular document ... . Inspection is a quality improvement process for written material. It consists of two dominant components; product (document itself) improvement and process improvement (of both document production and Inspection)" [GILB93].

Desk checking is basically an informal, self-checking review technique that is smart practice and should be employed after producing any kind of software or documentation. However, as quoted from [HUMP90] above, desk-checking has a limited potential for finding defects because of our inability to find all errors in our own work. Note that tools are being developed to specifically support software inspections. These types of tools are not yet reviewed in this report.

3.2 Automated Static Analysis

Source code static analysis tools are useful for browsing, measuring, displaying, decomposing, reengineering, and maintaining source code [ARNO90]. Some examples of types of tools that support these functions are listed beside Youngblut's static analysis techniques as follows:

- General Information – cross referencing tools, size measurers, complexity measurers.
- Static Error Analysis – syntax and semantic analyzers, structure checkers.
- Symbolic Evaluation – symbolic evaluators, proofs of correctness.

The types of source code static analysis tools that this document reviews include those tools that support the General Information and Static Error Analysis techniques. Section 2.3.3.a introduced source code static analyzer tools. This section provides additional guidance and motivation for using source code static analyzers. Note that there are very few products that were designed to perform only one major static analysis application; most tools provide multiple capabilities.

3.2.1 Auditors

Source code quality is a primary concern within the software community. Due to this concern, many agencies are establishing Total Quality Management (TQM) policies. The idea of quality software (or quality systems) is not new, but with the complexity of today's systems, it is receiving added emphasis.

Bill Hetzel states, "The cost of quality falls into three broad categories: prevention, appraisal, and failure" [HETZ88]. Lack of attention in the prevention and appraisal categories implies, there's never enough time to do it right, but there's always enough time to do it over. Tight schedules, little money, and the lack of the appropriate processes and effective tools encourage the overly optimistic view that there won't be defects and failures.

Some automated support is available for analyzing code to ensure that there have been no violations of coding standards such as variable naming conventions, structuring conventions, code nesting depth checks, etc. Auditors can play a significant role in reducing the code inspection effort. Inspection checklists don't need to include checks for characteristics that auditors evaluate. Source code auditors determine adherence to coding standards by automatically comparing the developed code to established coding standards.

3.2.2 Complexity Measurers

Years ago, the only way of measuring the size or complexity of code was to count the number of lines of code. Today, there are still many organizations that use this as their only method of measurement. There is still a lot of discussion about what constitutes a line of code; are comments to be counted? What about blank lines? Knowing the size of a program is still a vital piece of information, and it really doesn't matter what the project (or company) determines constitutes a line of code as long as they are consistent. But don't fall into the trap of trying to compare your productivity, i.e., lines of code/month, against someone else's published metrics; you will probably be comparing apples and oranges.

Counting the lines of code shows how big the module is, but gives little indication of its complexity. Consider the following two lines of code as an example:

- c = 25;
- if (((a <= 0) and ((b > c) or (b < d and c > b))) then

Both of the above examples are a single line of code, but the complexity of the second is obviously greater than the first. Complexity of the software can be considered how "busy" the code is. The "busier" the code, the more difficult it is to develop and ultimately to maintain. Some of the benefits of measuring the complexity of the software are

- Determining how difficult the code will be to test and maintain. This information can help when allocating testing resources.
- Identifying which sections of code should be rewritten.
- Obtaining an estimate of the number of defects to expect. Research has shown a correlation between complex code and defects.

Complexity measurers can analyze code and identify potential problem areas that may be too difficult to effectively maintain. Complexity measurers can be used as early as the design phase by analyzing program design language (PDL) and during development to help minimize complexity problems as early as possible.

The industry is beginning to seriously use complexity metrics as additional input to determine the test schedules. The two most widely recognized complexity metrics are McCabe's cyclomatic complexity and Halstead's software science metrics. McCabe's complexity metric can be defined in several ways, the simplest of which is to count the number of decisions in a routine, and add one. Knowing the cyclomatic complexity of the code can help the developer determine the minimum number of independent unit tests that are required to execute every line of code, and every decision path, within a module. Halstead's complexity metrics consist of a series of metrics based on the total and unique numbers of operators and operands. The metrics include theoretical estimates of length, program volume, program level, effort, etc.

3.2.3 Cross Referencing Tools

Interfaces between software modules is another problem that programmers have always had to deal with. Cross referencing tools provide the information so that when a variable is modified in one section of code, the programmer knows all other places that the code will have to be modified. This is also extremely helpful for the maintainers of the code. Some of the capabilities provided by good cross referencing tools are

- Allows the programmer to perform cross-referencing on the entire system.
- Allows cross-referencing while still within an editing session.
- Provides on-line, interactive cross-referencing, and viewing capability.

Note that most good compiler systems provide some cross-referencing capability.

3.2.4 Size Measurers

Because of the interest in tools that measure SLOC and function points as a result of the new Air Force Software Metrics Policy 93M-017, size measures was added to the static analyzer tool classification. The metrics policy requires that all Air Force organizations and contractors that do business with the Air Force identify and collect a minimal set of metrics that have the attributes of size, effort, schedule, quality, and rework for each of their projects that consist of 20,000 SLOC or more.

There are several types of size measurement tools including SLOC estimators, functions point estimators, and actual SLOC measurers. This report focuses on measurement of existing code. Actual SLOC measurers generally count comments, total lines, executable lines, and declarations. Some of these tools provide historical data bases to track code growth and changes. An attribute of some SLOC measurers is the capability to automatically collect SLOC counts at predetermined times. Most code complexity measurement tools provide some SLOC counts.

3.2.5 Structure Checkers

Understanding the structure of the software is another problem that maintenance programmers must deal with. As the code grows and becomes more complex during development, a programmer often has a difficult time remembering which modules are called by other modules. These tools are particularly useful when maintaining or reengineering code. Structure checkers provide increased visibility of systems under development and maintenance. Structure checkers report through graphic or textual means the module call structure. Structure checkers also analyze code structure for "dead code" (not capable of being executed), recursion (in languages like FORTRAN where it is undesirable), and nonstructured constructs, e.g., GO TOs. Note that some code may be logically "dead," and can only be identified by dynamic execution of the code.

3.2.6 Syntax and Semantics Analyzers

Syntax and semantics analyzers enhance the analysis capability of average compilers. Often, when someone thinks of source code static analysis tools, what comes to mind are the functions under this category of tools. *Syntax* is defined as the rules governing the structure of a language, and *semantics* is the relationship of characters and their meanings. Compilers check for syntax of the language to make sure that the rules of the language are being followed. Because of the nature of the language, Ada compilers perform more semantics checking than other language compilers. Syntax and semantic analyzers typically perform the following functions:

- Check for uninitialized variables.
- Check calling argument compatibility between the calling routine and the routine being called.
- Check for certain semantic errors. For instance, a variable that is defined and not used.

4 Evaluation and Selection of Test Technologies

As can be seen from Section 2, there are many types of testing tools. There are also many test tool functions and categories not listed in this publication. This report provides evaluation and selection information about the major types of test tools. Some new tools and testing technologies are appearing in the marketplace and will be included in future releases of this report as information becomes available and as the technology matures or becomes more prevalent.

This section describes the appendices that catalog tool information, conferences and seminars, references, and a glossary of testing terms. This section also addresses the process for evaluating and selecting software testing technologies from a wide assortment of test tool types and their specific offerings. Many methods have been devised to assist with product evaluation and selection. Most of these methods are difficult to follow because some of the information that they recommend is difficult to obtain. Even the task of surveying tools can be difficult and time consuming when starting from scratch. This technology report provides a good place to start the evaluation and selection process by providing

- Introductory information about testing technologies and practices.
- Classification of test tools.
- Guidelines for evaluating and selecting software test tools.
- A catalog of candidate tools.
- Guidance for improving the testing process using the Software Engineering Institute's Capability Maturity Model.
- Test technology references, glossary, and conferences.

Preliminary or brief evaluations (product critiques) from experienced practitioners are also available upon request from the STSC. Finally, detailed evaluations (quantitative evaluations) are available upon request as are the characteristics for performing the detailed evaluations.

4.1 Test Information Catalog

Appendix A contains a test tool catalog (list). Appendix B contains information about STSC's product critique system. Appendices C through E contain additional information about references,

testing conferences and seminars, and a glossary of testing terminology, respectively. The following sections further describe the contents of the appendices:

4.1.1 Test Tool Lists

Test tools can be identified by reading trade publications (including periodicals, books, and other tool catalogs), attending conferences, and networking with peers. Appendix A catalogs test tools by tool name, vendor name, and tool type. Note that some types of test tools are not listed in this report because of space limitations. A current list of those tools (or any type of tools on which the STSC has information) can be obtained upon request from the STSC.

- Product Sheets by Tool Name. The product sheets are completed by the vendors and include the tool name, the version number, vendor name, phone, fax, E-mail address, vendor address, point of contact, tool types (classifications), languages supported, and platforms/operating systems supported. These sheets also contain product descriptions, pricing, site license availability, number sold, release date, product sheet dates, and an indication of training, user group, newsletter availability. See Appendix A.1. Abbreviated product sheets can also be provided when faxing to interested organizations to minimize the size of the tool information.

- Test Tool Lists by Vendor Name. Test tools are reported for each vendor in Appendix A.2.

- Test Tool Lists by Test Tool Types. Test tools are reported for each test tool type classification in Appendix A.3.

Some other tool catalogs that are helpful include

- Software Quality Engineering, *Testing Tools Reference Guide*, 800-423-TEST [DURA93].

- Software Maintenance News, *Software Maintenance Technology Reference Guide*, 415-969-5522 [ZVEG94].

- CASE Consulting Group, *CASE Outlook*, 503-245-6880 [FORT91].

- Grove Consultants, *CAST Report*, 44-625-616279 (United Kingdom) [GRAH93].

- Sentry Publishing Company, *Applications Development Tools Product Guide*, 508-366-2031 [SENT94].

4.1.2 Product Critiques

Product critiques highlight unique or noteworthy tool capabilities and significant or annoying problems. The STSC is soliciting product critiques from experienced practitioners and providing this

information upon request. Customers can read opinions from experienced colleagues in a similar manner to the way friends ask each other for their opinions when buying a new car or some other expensive item or service. Contact the STSC for product critiques of any test tools that may be available. Included in Appendix B is a *CROSSTALK* article soliciting product critiques [PETE92]. The article explains STSC's product critique system and gives instructions for completing the form. We invite all experienced practitioners to participate in the product critique system by completing a product critique form (included in Appendix B) for each software development or maintenance tool used.

4.1.3 References

Appendix C contains cited references to publications that discuss test-related technologies.

4.1.4 Testing Conferences and Seminars

Appendix D contains a list of conferences and seminars that are of particular interest to software testers and quality assurance personnel.

4.1.5 Glossary

Appendix E contains a glossary of software testing technology terms.

4.2 Evaluating Test Technologies

The STSC has adopted a simplified approach to tool evaluation that does not require the use of detailed test evaluation procedures to verify functionality and determine quality characteristics about software products. STSC's recommended test tool evaluation guidelines start by obtaining this technology report, defining and funding the evaluation project, and proceeding as follows:

(1) Identify candidate technologies for information that is desired.

(2) Training is encouraged early for state-of-the-practice testing techniques to obtain more information about available testing technologies that are supported by automated tools. Attendance at testing conferences and seminars is also recommended.

(3) Perform needs analyses to document what test technologies are needed. A defined testing process is highly recommended; however, complete and accurate software requirements are essential in determining specific testing needs for a given system. Candidate tools need to be identified and cost estimates obtained. The basic costs must be estimated for tools, additional hardware and software, training, and integration for the top few candidate tools. Estimates on the impact to the current processes are recommended for those tools that require significant "ramp-up" before

they can be used effectively, e.g., coverage analyzers may not require much time to learn and use properly whereas requirements-based test case generators will require training and an associated "learning curve."

(4) Review or request product critiques or any available tool evaluation information on hand at the STSC for an initial look at tool performance and market acceptance.

(5) The top few technology candidates need to be evaluated in more detail if the tools are a major investment in terms of tool costs, support, training, and adoption into the organization. [FIRT87] contains generic software tool questions important for many software development tools. [IEEE92] criteria lists also provide an excellent source of important evaluation characteristics. Scores can be computed in a similar manner to Mosley's Efficient Tool Assessment Methodology [MOSL92] (see Section 4.3.8) or you can use the weighted system provided in [IEEE92]. Evaluations are performed with the user's needs in mind to minimize the evaluation effort. This process ensures that efforts and expenditures are minimized for each evaluation while providing the most current available data.

(6) DoD organizations that require detailed (quantitative) evaluations should contact the STSC. Funding for quantitative evaluations generally would come from the DoD user (requesting) organization. Costs could be amortized depending on user interest in the evaluation information. Expert tool users would then be identified from the product critique authors and would be invited to perform quantitative evaluations based on known user needs. Availability of evaluators will need to be negotiated between the DoD user organization, the STSC, and the evaluating organization.

Evaluators will be provided lists of characteristics that specify the criteria for tool evaluation and scoring. More than one evaluation of a given tool will be sought, and discrepancies will be resolved. Lists of evaluation characteristics can be provided upon request, which cover issues such as ease of use, power, robustness, functionality of the various types of tools, ease of insertion, and the quality of vendor support.

(7) Depending on the amount of the total investment, a special test case may need to be developed. Each tool or technology would then be evaluated by potential users (technology champions) as to how well it supports their testing effort. Special emphasis should be placed on evaluating user interfaces, which may be the only significant difference between various types of testing tools. For example, candidate coverage analyzers may perform the same basic functions, but the number of required commands and the conciseness of the outputs may make one tool far superior to another.

4.3 Selecting Test Technologies

Before selecting and installing the tool, the organization needs to consider the impact that the tool will make on its process. Meaningful metrics need to be accumulated for measuring the performance and quality improvements. Even if a tool is not selected and implemented, organizations should begin collecting metrics that are meaningful for them, and organizational progress should be

monitored as required by the new Air Force Software Metrics Policy [DRUY94]. The following issues need to be considered when selecting automated software test technologies:

- Test processes
- Test lifecycle
- Budgets
- Personnel
- Schedules
- Project issues
- Training requirements associated with test tools
- Tool scoring techniques

Manual testing is defined as the execution of the developed software program or system through the normal user interface and manually observing results. *Computer-assisted* or *automated testing* is defined as the use of software test tools to automatically perform one or more testing functions.

4.3.1 Test Processes

According to the Software Engineering Institute (SEI), all software development organizations should establish a Software Engineering Process Group (SEPG). This group may consist of one technology champion or several representatives of an organization's development team who would be charged with the responsibility of finding ways to improve software development processes. New technologies, including methodologies, techniques, and tools, should be researched and appropriately inserted in a planned, orderly fashion.

Obviously, if an organization's software development process has instituted the use of selected automated test tools, then those tools should be used. When any development phase is upgraded with new technologies, the testing process must be reconsidered since *all* phases involve some form of testing. When new CASE technologies are inserted to support requirements analysis and design, testing strategies may need to be reworked throughout the development lifecycle.

An important (but easily overlooked) advantage to automated testing is the increase in technological sophistication within the organization that comes with the use of automated tools. The benefits of this increase in skills may be difficult to quantify, but technological sophistication builds on itself. Cultivating the required technical skills is a necessary element of process improvement. Fundamentally, a testing methodology needs to be recognized and uniformly adopted by the organization before supporting tools can be integrated into the testing process; otherwise, the tools may be viewed as an interference to the status quo.

An organization waiting for the perfect set of tools or for prices to come down may become less competitive in its ability to efficiently and effectively perform its testing roles. Many organizations will not use some of the new automated tools on the market today. Organizations that have acquired and used these tools have a major productivity advantage over those that do not.

4.3.2 Test Lifecycle

Since so many software test activities are on the critical path of the development schedule, test development should be scheduled and accomplished as early as possible to be prepared for unit testing, integration testing, system testing, and acceptance testing. This implies that the test effort and software development effort should be started concurrently, and that a software test development lifecycle should be identified and coordinated with the software development lifecycle (for example, see Figure 2-1). Static analysis activities apply to all phases of the software development lifecycle. One published estimate reports that 50 percent or more of the software errors are due to incorrect or modified requirements specifications. It is a well-known fact that software reviews can significantly reduce the number of errors in the later phases of development. Testers should be involved in early analysis and design reviews.

4.3.3 Budgets

Short-term and long-term interests will most likely clash with regard to budgets. In many organizations, management requires quantitative estimates of the return-on-investment (ROI) for new software tool purchases. These are often difficult to obtain without knowing the costs of software to start with. Sometimes subjective justifications are all we have to help persuade management to purchase a new tool. Note that it may be easier to justify large initial costs if the tools and training can be used on other projects. This requires long-term strategic planning that spans many projects and organizations.

4.3.4 Personnel

An often overlooked point is that the test development effort is just that: a development effort, requiring personnel with development skills, tools, and positive attitudes. Test plans, test cases, test software, and test documentation are developed. Software testers have to be very creative in devising ways to increase test effectiveness while reducing effort. Boris Beizer has a good list of the essential characteristics of a good tester in his book, *Software Testing Techniques* [BEIZ90]. A few of these characteristics include not easily intimidated, has integrity, has tenacity, is detail conscious and goal oriented, and must have a certain amount of "cop" in them. Testers, like cops, are rarely rewarded openly and directly for a good job. If they do a good job, it can easily mean added work or embarrassment for someone else.

There is no question that the more sophisticated tools will require an attendant increase in skills. Application domain knowledge and mature development experience provide significant advantages for testers in building effective test cases. Developers and testers then have better communications and confidence in each other. However, the tendency is often to throw together an available group of varied skills and personalities and call it the test group. This lack of personnel consideration will likely result in a project with many difficult problems.

4.3.5 Schedules

Technology acquisition schedules and project planning schedules need to be considered when selecting new test technologies.

4.3.5.1 Technology Acquisition

If schedules do not allow enough time to select the proper new tools and obtain the required training, current techniques must be used. Ad hoc development and manual testing may be effective on very small projects with the right personnel. But if investments in effective technologies are not made on large projects, the organization will probably pay for it during maintenance.

4.3.5.2 Project Planning

Whether automated test tools or manual testing techniques are used, test planning should begin as early in the development lifecycle as possible, i.e., during requirements definition. Testing must be treated and scheduled as an integral part of the development effort. Strong leadership commitment is required to elevate the importance of test preparation if an organization is still not committing test resources until after code is produced.

4.3.6 Project Issues

In large or complex projects, computer-aided testing may be mandatory to automatically generate test cases, to keep track of configurations, to automatically retest changed components, etc. Requirements tracing can easily get out of hand without modern tools. Manual checking of design and code structure can become burdensome. How do you stress test a network that has the capacity to support several hundred nodes? How do you test this network continuously over several days? If the inputs and responses happen too fast for a human to keep up, then computer-assisted testing also is mandatory.

Employee turnover can cripple a project if a mechanism is not in place to retain as much project knowledge as possible. It is very likely that key personnel will leave during a long-term project and take their skills with them. Some automated testing tools can be thought of as skills repositories to preserve critical capabilities during the life of the product. People, for a variety of reasons, cannot be relied upon to completely remember or document all development or test details. Capture-replay tools can record all test inputs (document automatically or permit editing of test scripts). Tests can be run automatically and the results can be compared automatically to the expected outputs with no human intervention.

It may be difficult to justify the cost in time and money of automated test tools and training if the product is a one-of-a-kind or one-time-only product, unless the project's complexity, size, and precision requirements or the future plans for tools dictate automated testing.

4.3.7 Training Requirements Associated with Test Tools

Along with the added sophistication of new technology, come the added costs in time and money for the training necessary to use this technology. There is no easy way around this. The learning curve may require that more immediate projects not be included in the new development strategy. The cost of this technology can be amortized over a large number of projects. There is a good chance that test automation, incorporated with a proper level of software inspections and reviews, will reduce test and rework efforts and budgets over time while providing higher quality systems.

A hasty, ill-considered tool selection will be a costly burden to bear for a long time. This is not a new problem. A word processor or database management system that is not carefully selected can be a long-time thorn in productivity's side. The game is the same, but the stakes are getting

higher in the software development world. The costs of a bad tool selection, in retraining time alone, may doom an entire product, organization, or company. Sophisticated technology is a double-edged sword that can help you or hurt you.

Development support activity training (test in particular) is usually low on most priority lists. Training, or more aptly retraining, can be the winning or losing edge in the sophisticated software world of which we are a part. Training cannot be treated as an afterthought. There is too much at stake.

4.3.7.1 Formal Training

Software testing is not a subject that is commonly taught at the college level as a separate subject. If taught at all, it is usually included as part of the general software engineering courses. There are a few specific software testing classes to be found, however, and probably more to come as quality becomes a hotter topic.

4.3.7.2 Vendor Training

Vendors will usually supply some kind of training. The main drawback here is the costs for time, classrooms, and manuals (printed or electronic). Customer-site training is often available and depending on the number of people involved can be cost-effective. Otherwise, individuals can go to the vendor site; however, this requires significant resources. Vendor manuals are the most common form of vendor training. The learning process is slower, but you may learn just what you need to get the job done. Some vendors provide on-line tutorials or computer-based instruction to help reduce the costs of training while broadening the base of potential trainees.

4.3.7.3 Seminars, Conferences, Meetings, and Workshops

Seminars, conferences, meetings, and workshops are taught at more of a generic level, unless the tool in question is very common and possibly dominates its tool domain. These courses can sometimes be more informative than those supplied by the vendor. Costs usually reflect this reality. Some seminars are built around a particular method or tool that is currently getting generous press coverage. Seminars are good for learning about new technologies and are an effective way of obtaining contacts within the industry. Government and industry groups offer a wide variety of testing conferences that deal with all aspects of development and testing.

Appendix D and the STSC's periodical publication, *CROSSTALK*, contain lists of upcoming conferences and seminars that may be of interest to readers.

4.3.7.4 Individual Research

By far, the most common forms of education in the computer world, and testing in particular, are independent reading and consulting with peers. Industry trade journals abound and cover nearly every subject imaginable. Many publications are free if the reader is employed in that subject area, but others can be costly and should be bought by an organization's library for everyone's benefit. Relations with peers are valuable and should be nurtured. Often, there are personnel in the immediate organization that have first-hand experience who can and should be tapped for information.

4.3.8 Tool Scoring Techniques

All of the tool selection sections under Section 4.3 impact a tool selection decision to a greater or lesser degree. After consideration of these issues, it makes sense to compare similar tools to identify strengths and weaknesses based on the detailed evaluation scores obtained by following the guidelines in Section 4.2. The STSC has defined spreadsheets that automatically sum up weighted evaluation scores. A sample scoring spreadsheet or matrix (with fictitious data) is presented in Figure 4-1. Features of the Tool Scoring Matrix include

- All of the first-level descendent characteristics are listed prior to listing lower-level descendants. This makes it easy to view the important issues rather than having to potentially scan several pages to find scores for those first-level descendants. Also, briefing charts can be easily prepared to report the most significant information.

- Only ones and zeros were used at the lowest-level descendent characteristics to indicate whether a tool has a capability or not. (The score for a characteristic was left blank if it was not evaluated.) Any scoring range could have been used (depends on user desires) but you may want to keep the scoring range simple.

- Weights can be defined according to user desires; however, assigning weights that are not equal at low-level groups is usually subjective and may be difficult to obtain consensus. The sum of the individual characteristic weights appears on the top line of the group under the weight column.

- Group scores consist of the summation of the weighted, normalized scores (between 0 and 1) of the descendent characteristics.

Call the STSC for information about computing scores and selecting tools based on evaluation information.

A Comparative Evaluation of Tool_A and Tool_B

31 May 94

ID	CHARACTERISTICS	TOOL_A	TOOL_B	WEIGHTS
	Complexity Measurer	**0.80**	**0.90**	**1**
1	Ease of Use			0
2	Power			0
3	Robustness			0
4	Functionality	0.80	0.90	1
5	Ease of Insertion			0
6	Quality of Vendor Support			0
7	Other			0
...				
4	**Functionality**	**0.80**	**0.90**	**2**
4.1	Methodology Support			
4.2	Correctness			
4.3	Types of Metrics	0.60	0.80	1
4.4	Types of Reports			
4.5	Database Support	1	1	1
...				
4.3	**Types of Complexity Metrics**	**0.60**	**0.80**	**5**
4.3.1	McCabe Metrics	1	1	1
4.3.2	Halstead's Metrics	0	1	1
4.3.3	Nesting Depth	1	1	1
4.3.4	Variable Span of Reference	0	1	1
4.3.5	Design Structure	1	0	1
...				

Figure 4-1. Sample Tool Scoring Matrix.

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5 Improving the Test Process Using the CMM

Last year's test technology report, [TPEE93], mentioned in its Section 5.2 that the next updated test technology report would provide additional testing guidance at the Software Engineering Institute (SEI) Capability Maturity Model (CMM) Level 2. This section contains guidance for improving test management practices at Level 2 and some test engineering practices at Level 3 through 5. This section identifies testing (or test supporting) activities that exist in the CMM and recommends some supplemental testing activities based on current effective industry practices.

5.1 CMM Background

The CMM provides a formidable tool that software development[3] organizations can use to improve their software processes. It is a software process maturity framework "that describes key elements of an effective software process" [PAUL93]. The CMM defines five maturity levels:

(1) Initial – Ad hoc, occasionally chaotic process.

(2) Repeatable – Disciplined process.

(3) Defined – Standard consistent process.

(4) Managed – Predictable process.

(5) Optimizing – Continuously improving process.

Each maturity level is composed of several Key Process Areas (KPAs), which are related activities "that, when performed collectively, achieve a set of goals at that maturity level" [PAUL93]. Also, the maturity levels suggest an orderly progression to develop effective management practices at Level 2, then improve technical and organizational practices at Level 3. With the foundation of the previous levels, Level 4 initiates statistical processes through establishing improved measurements and process improvement goals and finally, Level 5 focuses on continuous process improvement through defect prevention and improved practices and technologies.

5.1.1 CMM Testing Issues

Software test management practices need to be reviewed early in a process improvement initiative. The CMM tells us that until sound management practices are in place, such as those

[3] Software development also refers to software maintenance in this section.

identified at the Repeatable Maturity Level, "the benefits of good software engineering practices are undermined by ineffective planning and reaction-driven commitment systems" [PAUL93].

However, there are some software testing issues that need additional attention in the CMM, particularly in the area of test management. Modern testing principles recognize that software test development parallels software development. Software test development has a lifecycle that starts with planning, proceeds through analysis of test objectives (test requirements) and design of test cases, then follows with implementation (building test scripts, test data, etc.). Evaluation of the test work products (testware: test plans, test procedures, test cases, etc.) occurs at each test lifecycle phase. Some test management and planning issues are either not addressed in the CMM or are embedded in the CMM in several general development guidelines that do not specifically address testing. This can make them difficult to apply to improve software testing.

5.1.2 Example Concerns

The Repeatable Maturity Level does not require the process to have defined test objectives nor a specific test plan to address those objectives. Proper management of test development requires defined test objectives. Software requirements cannot be exhaustively tested under all data input conditions and process states; therefore, test objectives are required to define how conformance to requirements will be evaluated. Test objectives include functions and constraints, software states, input and output data conditions, and usage scenarios to test for at the various testing levels used on the project, e.g., unit, integration, system, acceptance [GELP94]. As an industry, we have learned the importance of defining and managing requirements. We don't want to be making fundamental requirements and design decisions while we're coding the system; similarly, we don't want to be making decisions about test objectives and test designs while we're building (coding) the test procedures and test data.

Obtaining early agreement from the customer organization on the test objectives can avert many problems, such as unprepared and uninformed testers with no testing goals, that can otherwise occur near the end of a project. Test objectives defined early can affect and actually guide requirements definition and analysis, design, and coding. Test cases, including success criteria, are designed from the test objectives. Test objectives are also required to effectively track test status and repeat progress on future projects.

Determining test objectives is a technical activity, but managing those objectives is a test management activity. Unfortunately, a common perception is that most test activities are engineering activities to be addressed at Level 3, and they do not need to be considered in the early stages of process improvement. A CMM-Based Appraisal for Internal Process Improvement (CBA IPI), formerly called Software Process Assessments (SPAs), may ignore test management issues in the resulting process improvement Action Plans. Some software management principles in the Requirements Management KPA need to be applied specifically to test development. Section 5.3.1.2 lists some recommended test management practices for managing test objectives.

5.2 CMM Benefits

More organizations are recognizing the benefits of using the CMM to improve their software development practices. This section discusses several important benefits of using the CMM to improve software processes, specifically testing processes. Organizations should focus their improvement efforts on "the few issues most critical to software quality and process improvement" [PAUL93]. Improved testing practices can provide significant software quality and process improvements. The following sections discuss several important benefits of using the CMM to improve software testing processes.

5.2.1 Advocate

The CMM is an advocate for software developers and testers who have managers with unreasonable expectations. The CMM is also an advocate for managers who have staff members who practice ad hoc methods with no accountability. Top-level DoD management is committed to achieving higher software process maturity levels [MOSE93]. Developers, testers, and managers will have a greater respect and appreciation for planning and monitoring progress with the adoption of CMM practices.

The CMM advocates senior management sponsorship, written organizational policies, proper levels of training for each activity, and resource availability to do the job. If any of these controls are missing, the project is at risk and will be difficult to complete on time, within budget, and with acceptable quality. As an example, Raymond Dion of Raytheon expressed the importance of training in his organization, "Project managers who once insisted that all training be funded by overhead are now accepting bids that include training costs, because we can demonstrate a direct benefit to the project" [DION93].

5.2.2 Structure

The CMM has an interesting horizontal and vertical structure that encourages solving related problems at each level in priority order as well as evolving software development practices from level to level. While the CMM says that "key process areas have been defined to reside at a single maturity level," many software practices evolve as the organization matures [PAUL93]. For example, defect handling practices mature from policies for dealing with problems at Level 2, to documented practices for tracking and analyzing defects at Level 3, to quantitatively predicting defects at Level 4, to defect prevention at Level 5.

We're encouraged to adopt practices that improve our maturity to the next level since they provide the foundation for further improvements. However, some high-level practices, like setting up a software engineering process group (SEPG) which is a Level 3 activity, exert a maturity-pull effect for Level 1 organizations. "They can facilitate the introduction and acceptance of other practices and so should be introduced early" [CORD93]. Cord's theme is that defect-causal analysis (a Level 3-5 activity) also exerts a maturity-pull effect for Level 1-2 organizations. Being careful not to take on more than we can handle, adopting improved practices (acting mature) is the way we start to improve our processes.

Note that we have to be careful to adopt enough of a recommended practice in order not to develop bad habits. For example, if you don't consider your organization's optimum inspection[4] rate when first introducing peer reviews or inspections, you will have limited success. For peer reviews to be effective, you need to monitor your review rates to determine and abide by your optimum rates [GILB93]. Measuring optimum inspection rates is basically a Level 4 activity, but it is important when first implementing peer reviews.

The internal structure of each KPA helps you consider important issues such as your organization's ability to do the job and relevant configuration management, quality assurance, evaluation, and progress measurement activities to ensure a good job is done. Each KPA contains an opening discussion that describes its purpose. Then, specific goals of the KPA are listed. Finally, a set of Common Features are provided that address the following:

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[4] Further references to peer reviews include inspections.

- Commitment to perform with required actions to ensure the process is established.
- Ability to perform with preconditions that must exist.
- Activities performed with roles and procedures to implement the KPA.
- Measurement and analysis with associated example measurements.
- Verifying implementation with steps to ensure compliance.

5.2.3 Other Test Support Activities

The CMM has recognized the importance of requirements, which may be reflected in the placement of the Requirements Management KPA as the first KPA in the Repeatable Maturity Level.

The CMM includes peer reviews in addition to internal reviews with management and formal technical reviews with the customer. Peer reviews have been accepted as an important industry practice that cost-effectively identifies many defects in the phase they were created and effectively prevents them from being passed on to subsequent phases. If any software or testware is worth building, it is worth planning, analyzing, designing, implementing, and evaluating similar to production software. Note that managers are not included in peer reviews, which helps improve the effectiveness of finding defects in an ego-less, team environment during a specific development phase.

The CMM's key practices were written "in terms of what is expected to be the normal practices of organizations that work on large, government contracts" [PAUL93]. Teamwork is emphasized along with practices that improve the planning, tracking, and oversight management capabilities of the organization.

The CMM has a future. The Software Engineering Institute has a CMM Configuration Control Board that entertains suggestions for improvements. Future editions may begin to address technical and human resource maturity issues. The next release of the CMM may appear in 1996.

5.3 Concerns

An organization improving its software development practices will want to consider the testing process in light of all of its problems in a priority order. Unfortunately, the CMM does not focus much on software test management and planning, especially at the Repeatable Maturity Level. Many fundamental test planning activities are not addressed until Level 3. The following sections

address software test management and test engineering concerns. Each section is further divided into subject areas that identify, discuss, and recommend improvements for specific concerns about CMM test practices or concepts that need additional consideration.

5.3.1 Software Test Management Concerns

Improving test planning, estimating, and tracking practices will give management increased visibility and control over our test development, execution, and analysis activities [ROYE93]. As mentioned earlier, the CMM does address some test management activities. However, it is difficult to get a clear picture of the CMM's recommendations because test management guidelines are embedded within several general software development practices. Many of those practices don't specifically address testing nor do they show enough software test related examples. Beizer states,

> "Although programmers, testers, and programming managers know that code must be designed and tested, many appear to be unaware that tests themselves must be designed and tested - designed by a process no less rigorous and no less controlled than used for code" [BEIZ90].

With this in mind, a Software Test Management KPA is proposed to supplement the CMM at the Repeatable Maturity Level. Subject areas as important as software configuration management and software quality assurance warrant particular attention in their KPA. Since software testing generally involves a separate organization (except for unit-level testing) and because it has separate goals and concerns from software building activities, a separate KPA might better address the needs of managing test development efforts. Also, because separate plans are often required for the various testing levels, managing the development of those plans needs to be clearly outlined and a Software Test Management KPA could help provide the needed attention to this important activity.

The business of writing an additional KPA may seem unnecessary or even contradictory with the CMM; however, note for example, that there is no Database Management KPA because it is not a universal concern to the industry[5]. If you need a Database Management KPA, the SEI recommends that you develop one to support your process.

The following subject areas identify major CMM software test management concerns. The recommendations in these subject areas form a framework for a Software Test Management KPA that

[5]The Software Subcontract Management KPA also does not universally apply but was included because of its importance. Note that there are several practices expected of subcontractors that are not expected of developers.

could be used by all organizations to better support their testing practices. This framework of recommended practices parallels several CMM Level 2 practices but specifically addresses the test group, the test activities, and the test work products.

5.3.1.1 Risks

Testing is not associated with risk assessment in the Repeatable Maturity Level. Risks and available resources dictate the scope of testing. Identifying risks is the heart of testing and determines test objectives. If you believe something is a risk, you test for it. If you want a group of people to agree about when to stop testing, then consensus on risk assumptions must be obtained early in the development effort. This is fundamental to the management of the project. "This makes the testers job doable" and increases test effectiveness [GELP94]. Also, the risks and test strategy will mold the test objectives and is fundamental to planning and managing the testing effort. The Software Test Management KPA should require that test objectives and test plans be based on assessed risks.

5.3.1.2 Test Objectives

As mentioned in Section 5.1.2, Example Concerns, test objectives are not adequately addressed at the Repeatable Maturity Level. Some example recommended Software Test Management key practices to manage test objectives (derived from the Requirements Management KPA) include

Goal 1	Test objectives are controlled to establish a baseline for testing software.
Commitment 1	The project follows a written organizational policy for managing test objectives.
Ability 1	For each project, responsibility is established for analyzing software requirements and risks to determine test objectives.
Ability 2	The test objectives are documented.
Ability 3	Adequate resources and funding are provided for managing test objectives.
Activity 1	The software test group and the software engineering group review the test objectives before test cases are designed to meet those objectives.
Activity 2	The software test group uses the software requirements and the test objectives as a basis for test plans, test work products, and testing activities.
Measurement 1	Measurements are made and used to determine the status of the activities for managing test objectives.

Verification 2 The activities for managing the test objectives are reviewed with the test manager and project manager on both a periodic and event-driven basis.

5.3.1.3 Test Planning/Tracking

The Software Project Planning and Software Project Tracking and Oversight KPAs in the Repeatable Maturity Level do not address software test planning, tracking, and oversight specifically enough because the test objectives, test responsibilities, and test work products are not discussed. Examples of software work products at the Repeatable Maturity Level do not include test work products. The only test plan mentioned at Level 2 is the acceptance test plan required by subcontractors.

The CMM basically treats test planning as a Level 3 engineering activity. Effective management at the Repeatable Maturity Level requires fundamental test planning, tracking, and oversight practices that address test objectives, test work products, and test activities [GELP94]. We need more visibility into the test process at the Repeatable Maturity Level. For test development, we need that same process visibility required at the conclusion of each major software development phase. You can't manage what you don't see. Note that one of the major objectives of software quality assurance is to make sure that you are performing as planned. When testing is not planned adequately, the controls are not in place for SQA and management to evaluate conformance and progress.

The CMM and the DOD-STD-2167A prescribe early software project planning. However, many organizations do not take full advantage of early test planning and test development practices [PAUL93] [216788]. Testing is still often regarded as a necessary evil, and detailed planning efforts are delayed until code is available for testing. Brooks told us long ago that "testing is the most mis-scheduled part of development" [BROO75]. As mentioned earlier, test development has a lifecycle. Recognition of that lifecycle will go a long way to improving our capabilities for estimating and scheduling test activities. Brooks also said, "Developers don't remember that they don't understand – they ... happily invent their way through the gaps and obscurities" [BROO75]. This certainly applies to test development. The goal should be to remove as many test development activities from the test execution window as possible. These are test management issues that need to be addressed early in a process improvement program by Level 1 organizations.

Some example recommended Software Test Management key practices for test planning (derived from the Software Project Planning KPA) include

Commitment 1	A software test manager is designated to be responsible for negotiating testing commitments and developing the software test plan.
Ability 2	Responsibilities for developing the software test plan are assigned.
Ability 3	Adequate resources and funding are provided for planning the test activities.
Activity 1	The software test group participates on the project proposal team.
Activity 5	A test development lifecycle is defined and coordinated with the software lifecycle.
Activity 6	The project's test plan is developed according to a documented procedure.
Activity 7	The test plan is documented.
Activity 12	The testing schedule is derived according to a documented procedure.
Activity 13	Software testing focuses on software risks associated with cost, schedule, and technical aspects of the project.
Measurement 1	Measurements are made and used to determine the status of the test planning effort.

Some example recommended Software Test Management key practices for tracking and oversight of testing (derived from the Software Project Tracking and Oversight KPA) include

Commitment 2	The project follows a written organizational policy for managing the test effort.
Ability 2	The test manager explicitly assigns responsibility for test work products and activities.
Activity 8	The project's test schedule is tracked, and corrective actions are taken as necessary.
Activity 9	Test engineering technical activities are tracked, and corrective actions are taken as necessary.
Activity 12	The test group conducts periodic internal reviews to track technical progress, plans, performance, and issues against the test plan.

5.3.1.4 Regression Testing

The requirement for regression testing in the Software Configuration Management KPA is optional. This KPA states that "reviews and/or regression testing are performed to ensure that changes have not caused unintended effects on the baseline" [PAUL93].

Though the intent of the Repeatable Maturity Level deals with being able to repeat the same basic process for other projects with the same likelihood of success, the very concept of repeatability is in question with respect to the project. The importance of regression testing is not adequately addressed at Level 2. The Software Configuration Management guidelines for regression testing and configuration control of test work products may need to be strengthened after changes are made. This will improve our capabilities to repeat our process on current and subsequent projects and will better support reuse of appropriate test work products.

5.3.1.5 Timing of Test Process Improvements

Because testing is treated as a technical activity, important test management issues may not surface as high-priority problem areas when CBA IPIs (or SPAs) are conducted using the CMM as a guide. Phil Koltun, of Harris Corporation, wrote, "The SEI's CMM postpones treatment of software testing until Level 3. That's unfortunate because it discourages less mature organizations from devoting process improvement attention to this vital activity" [KOLT93].

Unless we consider software test management practices early in our process improvement efforts, we may be headed for the same kinds of problems that we experienced in the past as we involved unprepared testers late in our development projects. Effective testing practices improve overall development effectiveness. A Software Test Management KPA will give added emphasis to testing to improve software development capabilities.

5.3.2 Test Engineering Concerns

The role of software testing has evolved in the industry over the last several decades from demonstration, to detection of errors, to evaluation, and finally to defect prevention [GELP94]. Unfortunately, testing's image has remained poor in many organizations because of excessive costs and ineffective practices. An example of this poor image is reflected in the CMM's statement, "During a crisis, projects typically abandon planned procedures and revert to coding and testing" [PAUL93]. Part of this poor image has resulted from testing being burdened with having to include

debugging and rework costs. Test costs should not include debugging and rework. Perhaps the CMM should say, "... coding, testing, and rework."

The application of effective test development practices (a CMM Level 3 issue) and appropriate levels of automation of test practices (management and engineering) will reduce costs and improve the quality of our software. The following subject areas describe some CMM test engineering concerns and recommendations for enhancing the CMM to better address effective test engineering practices.

5.3.2.1 Test as a Process Improvement Mechanism

Testing was not specifically mentioned as a process improvement mechanism in the CMM at any CMM level. The example software-related defect prevention groups at CMM Level 5 did not include the software test group.

Many organizations believe that you cannot test quality into software. While this is true after the software is built, it is not true during development. Test development activities can play a significant role in preventing defects during early development phases [GELP94]. In fact, building test cases from requirements may be the most objective and effective mechanism to evaluate requirements (and determine testability – a Level 2 practice) during requirements analysis and design. Lt Col Mark Kindl considers testing as "the most important method for producing error data necessary to guide process improvement" [KIND92]. Software testers can make significant contributions to prevent defects and should be consulted with respect to process improvement. Note that test process improvement must always include an increased capability to measure development progress.

5.3.2.2 Independence Versus Interdependence

The discussion about the *independence* of the test group needs to be enhanced in the Defined Maturity Level to address an *interdependence* of the test group and the software development group. Independence discourages the partnership that should exist between developers and testers in producing quality software. It also discourages early involvement of testers on the project. Admittedly, evaluation activities conducted by testers must be planned and conducted separately from development activities to be effective. However, there are significant benefits to having an interdependence between the developers and testers to provide a common understanding of requirements and tests [GELP94]. The concern about the developers knowing what the testers will

be testing for is unfounded. We want systems that have passed a "comprehensive" set of tests, where comprehensiveness is based on an adequate consideration and coverage of known concerns.

5.3.2.3 The Role of Automation

Because the CMM generally focuses on management concerns at Level 2, some people say that adopting CASE tools is a Level 3 activity. The CMM wisely councils that "the benefits of better methods and tools cannot be realized in the maelstrom of an undisciplined, chaotic process" [PAUL93]. While it is important not to automate chaos, some elements of the software development process, when understood well enough, can be considered for automation early in an improvement effort. The CMM also states that, "Software engineering technical activities are tracked and corrective actions are taken as necessary" [PAUL93]. Correcting involves improvements to activities that use improved practices and tools. Effective testing demands some amount of automation for systems of any appreciable size. Michael Deutsch says "the evaluation of the output data, if performed manually, is likely to be a tedious, time-consuming, and error-prone process for all but the most elementary of tests" [DEUT82].

An important question about software testing isn't whether or not an organization should automate but rather, "Are there technologies and tools available that will enable organizations to effectively test their software and are the tools economical in terms of (1) speeding up the development processes and (2) maximizing the quality of all product releases to minimize future error correction efforts?" These questions need to be asked for each project. Our investigations have found that there are a number of software test tools that can significantly help testers on a number of platforms and software engineering environments. Many of these tools can be used by organizations with a Level 1 rating. Note that several Level 2 Ability Common Features discuss providing adequate resources and funding, which includes the availability of appropriate tool support.

Tool adoption requires careful planning, evaluation, and trial use. However, not all CASE tools[6] are implemented alike nor do they require the same level of maturity to adopt. Tools that don't cause developers and testers to have to rethink their problems but rather help them better view their problems are good candidate tools in the initial stages of process improvement. Several types of testing tools can be considered early in a process improvement effort and can reduce resistance to organizational change. Jerry Durant believes that, "Test tools should provide immediate benefits"

[6] CASE tools include tools that support requirements analysis, design, code, test, documentation, etc. [IEEE92].

[DURA93]. Some of those benefits are intangible but still very important, such as an increased level of confidence in testing accuracy and comprehensiveness. Some example types of test tools that encourage process improvement are discussed in the next several paragraphs.

a. Defect tracking tools can help manage the test and rework effort at all maturity levels.

b. Static analyzers can automate many code review tasks (and can sometimes give you more diagnostics and code measurements than you might initially care for). Many static analyzers are considered "no brainers" to use (as simple as compilers) and can be adopted at all maturity levels. Note that sophisticated code measurement systems may require that mature practices be in place before adopting them.

c. While many coverage analyzers have found their way to a dusty shelf, coverage analysis is fundamental to the test process and is considered "criminal" not to know how much code was exercised during development [BEIZ90]. Maybe coverage analyzers should be considered at Level 2. However, adopting coverage analyzers will require some organizational changes. Note that coverage analysis was promoted to a CMM Level 3 test engineering activity from a Level 4 measurement activity in the old SEI software process maturity model published in 1987 [HUMP87].

d. Capture/replay and test management tools automate much of the test execution process and can vastly improve regression testing capabilities. But a significant investment may be required to buy and learn the tools before benefits can be derived. Changes may require a major rework of the test scripts, especially in graphical user environments. However, those changes may also require considerable rethinking in a manual or ad hoc testing environment if effective testing is a goal. Note that there are no savings with capture/replay tools during the first time a test is run [GRAH93].

e. Requirements-based test case generators provide an interesting capability that automates some test development activities at the software requirements analysis and design phases. Perhaps the greatest benefit that these kinds of tools offer is the promotion of gathering and improving requirements information. Test case generators build several classes of test cases (function, logic, boundary value, equivalence partitions, etc.) from available requirements information. These tools may also require a significant investment to adopt in the organization, but the benefits can be very impressive [PATR92].

For every practice, the CMM advocates that adequate resources and funding be provided, and appropriate tools be made available to accomplish the work. SEPG-type organizations are reminded not to forget that test process improvement includes an appropriate level of technology and tool automation improvements. Another maturity-pull effect can be felt with the adoption of appropriate Level 5 Technology Change Management KPA practices when adopting tools.

5.4 Recommendations

A greater appreciation for the CMM will come from studying it and applying its principles. Perhaps the best way to understand something is to try to use it *and* improve it. Every organization should carefully consider the practices advocated by the CMM and adopt those that make sense for them in a planned, orderly progression.

Many of the same management practices used to manage software development can be effectively applied toward the management of test development. Obtaining management commitment and support as the CMM advises is fundamental to a software process improvement effort. The CMM, supplemented with the proposed Software Test Management Key Process Area, may enhance your organization's understanding of their testing roles and may advocate to your management and your technical staff that improved testing practices should be considered early in a software process improvement effort.

Effective software test engineering practices plays a vital role in improving an organization's overall software development capabilities. Early involvement of testers with developers helps build quality systems. Finally, you don't have to be a Level 3 organization before considering appropriate automation of well-known testing activities.

This technology report provides a useful forum for exchanging ideas between DoD, SEI, and industry. Because of the attention focused on the CMM, many organizations are looking to it to guide their process improvement efforts. Contact the STSC for more information about applying the principles of effective software test engineering and about improving the material in these reports.

Appendix A: Test Tool Lists

Appendix A.1: Product Sheets by Tool Name

Tool: ABSTRACT/PROBE
Vendor: Advanced Systems Concepts, Inc.

Version:	–	Release Date:		POC:	Jack Edelman		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	201-798-6400	Fax:	201-798-9203
Report Date:	2/26/93	Report Updated:		E-mail:			
				Address:	33-41 Newark St. Hoboken, NJ 07030		

Description: Abstract/Probe furnishes accessible documentation/cross references of your applications software.
Classification: Coding, Reengineering, Cross Referencing Tool, Redocumenter
Features:
Languages Supported: COBOL, IMS
Configurations: AS/400

Tool: ACCENT R
Vendor: National Information Systems, Inc.

Version:	11.60	Release Date:	1/01/94	POC:	Dave Wagner		
Number Sold:	400	Single User Price:	$2,995	Phone:	408-985-7100	Fax:	408-246-3127
Report Date:	1/26/93	Report Updated:	6/02/94	E-mail:			
Training Available		Newsletter Available		Address:	4040 Moorpark Ave., Suite 200		
Evaluation Copy Available		Site License Available			San Jose, CA 95117		

Description: ACCENT R is an applications development environment. It generates optimized compiled code that can handle high-volume production processing against large databases with simultaneous users.
Classification: System Simulation, Requirements Trace, Design, Coding, Requirements Analysis, Testing, Documentation, Configuration Management, Reengineering, Reuse, Database, Software Engineering Environment, Debugger, Reusable Components Identifier, Syntax & Semantics Analyzer
Features:
Languages Supported: 4GL, C
Configurations: VAX/VMS

Tool: AccuTest
Vendor: AccuWare, Inc.

Version:		Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	408-985-7100	Fax:	408-246-3127
Report Date:	1/13/94	Report Updated:	6/29/94	E-mail:			
				Address:	4040 Moorpark Ave., Suite 200 San Jose, CA 95117		

Description: Designed to capture and automate the replay of test cases for character-based applications, such as 3270, AS/400, and similarly configured systems.
Classification: Testing, Quality Assurance, Database, Test Execution Manager
Features:
Languages Supported:
Configurations: IBM

Tool: Acknowledge
Vendor: Prometheus Products

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	503-692-9600	Fax:	503-691-1101
Report Date:	2/08/93	Report Updated:		E-mail:			
				Address:	9524 SW Tualatin Sherwood Rd. Tualatin, OR 97062		

Description: Acknowledge is a capture-replay tool.
Classification: Testing, Capture-Replay Tool
Features:
Languages Supported: --
Configurations: Mac/Mac OS

Tool: **Ad/Vantage.DM***

Version: 1.2 | Release Date: 1/01/90
Number Sold: -- | Single User Price: $24,400 group 20
Report Date: 1/04/93 | Report Updated:

Site License Available

Vendor: **Allen Systems Group**

POC: Kim Brooks
Phone: 800-932-5536 | Fax: 813-263-3692
E-mail:
Address: 750 11th St.
Naples, FL 33940

Description: Ad/Vantage.DM* automates the testing process by presenting an organized, methodical, self-documenting approach for reproducing the process. Ad/Vantage.DM* provides support for regression and stress testing, along with measurements of testing completeness.

Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager

Features: Text-based capture replay

Languages Supported: --

Configurations: Mainframe

Tool: **Ada Analyzer**

Version: 1-7-2 | Release Date: 11/29/93
Number Sold: 50 | Single User Price: $10,000
Report Date: 10/13/93 | Report Updated: 5/16/94

Evaluation Copy Available | Site License Available

Vendor: **Little Tree Consulting**

POC: Daniel Ehrenfried
Phone: 415-965-9043 | Fax: 415-64-7536
E-mail: dhe@rational.com
Address: 238 Flynn Ave.
Mountain View, CA 98043

Description: The Ada Analyzer is a set of support tools that scan large amounts of Ada code, locating items of interest and cataloging information. It traverses any set of compiled units, locates constructs that match specific selection criteria.

Classification: Testing, Quality Assurance, Metrics, Reengineering, Auditor, Complexity Measurer, Data Reducer & Analyzer, Defect/Change Tracker, Performance/Timing Analyzer, Status Displayer, Structure Checker

Features:

Languages Supported: Ada

Configurations: Rational, Sun/SPARC

Tool: **Ada Design and Documentation Language (ADADL)**

Version: | Release Date:
Number Sold: -- | Single User Price: $5,000-$10,000
Report Date: 6/28/93 | Report Updated: 6/30/94
Training Available
Evaluation Copy Available | Site License Available

Vendor: **Software Systems Design, Inc.**

POC: Dr. Thomas S. Radi
Phone: 714-625-6147 | Fax: 714-626-9667
E-mail:
Address: 3627 Padua Ave.
Claremont, CA 91711

Description: ADADL (Ada Design and Documentation Language) is an Ada-based PDL that satisfies DoD Directive 3405.2 requirements for a compilable Ada/PDL. The ADADL processor is both a design tool and a reverse engineering tool for Ada programs. ADADL analyzes both the pseudocode and actual executable Ada code to detect logic errors and to produce a "pretty printer" output report designed to simplify understanding the design. Users can create up to 10 customized "project management" reports to identify such things as requirements traceability, dates of completion of design reviews, coding or testing. The psuedocode design and executable code are analyzed to calculate the McCabe complexity metrics for each program unit. ADADL works in conjunction with the DOCGEN tool to automatically produce Mil/DoD standard documentation. It also works with the TestGen tool to assist in design unit test strategies.

Classification: Requirements Trace, Design, Coding, Requirements Analysis, Reengineering, Complexity Measurer, Cross Referencing Tool, Reformatter, Reverse Engineering, Test Execution Manager, Test Planner

Features:

Languages Supported: Ada

Configurations: DG, HP/VMS, PC/MS-DOS, UNIX, UNIX/VMS, VAX/VMS

Tool: Ada Measurement and Analysis Tool (AdaMAT)
Vendor: Dynamics Research Corp.

Version:	2.0	Release Date:	7/01/91	POC:	Wallace G. Hatem		
Number Sold:	150+	Single User Price:	$9,995	Phone:	800-522-7321	Fax:	508-475-2157
Report Date:	1/27/93	Report Updated:	6/30/94	E-mail:			
Training Available				Address:	60 Frontage Rd.		
Evaluation Copy Available		Site License Available			Andover, MA 01810		

Description: AdaMAT analyzes Ada source code against more than 150 parameters. Parameters such as relative reliability, maintainability, and portability are all measured. Lower-level parameters target specific programming practices.
Classification: Design, Coding, Quality Assurance, Metrics, Reengineering, Reuse, Complexity Measurer, Data Reducer & Analyzer, Defect/Change Tracker, Maintainability Analyzer, Reliability Analyzer, Size Measurer, Syntax & Semantics Analyzer
Features: SLOC Actuals
Languages Supported: Ada, PDL
Configurations: ULTRIX, IBM, Rational, SCO/UNIX, Sun/Sun OS, VAX/VMS

Tool: Ada Software Development Toolset
Vendor: Aetech

Version:	--	Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	$295-495	Phone:	800-522-7321	Fax:	508-475-2157
Report Date:	3/03/93	Report Updated:	6/30/94	E-mail:			
Training Available		Newsletter Available		Address:	60 Frontage Rd.		
		Site License Available			Andover, MA 01810		

Description: Aetech's Ada Software Development Toolset is an integrated set of advance tools for design, code generation, editing, analysis, configuration control, and documentation of Ada source code. Graphically design your program, compile, link and test it.
Classification: Coding, Documentation, Configuration Management, Reengineering, Complexity Measurer, Cross Referencing Tool, Forward Engineering, Linker, Reformatter, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: Ada
Configurations: PC/MS-DOS

Tool: Ada Type Interchange Generator
Vendor: Little Tree Consulting

Version:	1-3-3	Release Date:	11/25/93	POC:	Daniel Ehrenfried		
Number Sold:	1	Single User Price:	$15,000	Phone:	415-965-9043	Fax:	415-64-7536
Report Date:	11/29/93	Report Updated:	11/29/93	E-mail:	dhe@rational.com		
				Address:	238 Flynn Ave.		
Evaluation Copy Available		Site License Available			Mountain View, CA 98043		

Description: Creates and maintains subprogram to convert structured Ada types into byte streams and the reverse, allowing the transmission of data between heterogeneous computers running code compiler with different compilation systems.
Classification: Coding, Project Management, Reuse, Requirements-Based Test Case Generator
Features:
Languages Supported: Ada
Configurations: Rational, Sun/Sun OS

Tool: AdaCAST
Vendor: Vector Engineering

Version:	1.0	Release Date:	5/15/94	POC:	William K. McCaffrey		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	401-295-5855	Fax:	401-295-5856
Report Date:	4/28/94	Report Updated:	6/30/94	E-mail:			
Training Available				Address:	1130 Ten Rod Rd.		
Evaluation Copy Available		Site License Available			North Kingstown, RI 02852		

Description: AdaCAST is a computer aided software test (CAST) that can automate the software test process including test environment construction, test case generation, test execution, and test report generation.
Classification: Testing, Session Documenter, Test Data Generator, Test Execution Manager
Features:
Languages Supported: Ada
Configurations: HP/UNIX, PC/MS-DOS, Sun/UNIX, VAX/VMS

Tool: ADANON

Version:	2.4	Release Date:	1/01/91
Number Sold:	25+	Single User Price:	$1,230
Report Date:	1/27/93	Report Updated:	5/13/94
Training Available		Newsletter Available	

Vendor: Concurrent Computer Corp.

POC:	Linda G. Lewis		
Phone:	908-758-7000	Fax:	908-630-4833
E-mail:			
Address:	2 Crescent Pl. Oceanport, NJ 07757		

Description: ADANON detects noninitialized objects in an Ada program. Operates in Concurrent's SIM/Spectrum environment. The CASE integration framework provides a single environment of software development.
Classification: Design, Coding, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations: 6000/7000/8000; Series 3200-OS/32

Tool: AdaProbe/ICE

Version:	–	Release Date:	
Number Sold:	–	Single User Price:	(Contact Vendor)
Report Date:	1/04/93	Report Updated:	12/22/93

Vendor: ALSYS, Inc.

POC:	Technical Support		
Phone:	617-270-0030	Fax:	619-270-6882
E-mail:			
Address:	67 S. Bedford St. Burlington, MA 01803-5152		

Description: AdaProbe/ICE is a special version of AdaProbe directly integrated with popular emulators.
Classification: Coding, Testing, Reengineering, Debugger, Emulator, Structure Checker
Features:
Languages Supported: Ada
Configurations: DECstation/ULTRIX, HP/HP-UX, IBM/AIX, IBM/MVS/XA, IBM/VM/CMS, PC/MS-DOS, PC/OS/2, PC/UNIX, PC/XENIX, RISC 6000, Sun/Sun OS, VAX/VMS

Tool: AdaQuest

Version:	1.1	Release Date:	8/01/91
Number Sold:	2	Single User Price:	(Contact Vendor)
Report Date:	1/04/93	Report Updated:	6/30/94
Training Available			
Evaluation Copy Available		Site License Available	

Vendor: General Research Corp.

POC:	Michael G. Crawford		
Phone:	805-964-7724	Fax:	805-967-7094
E-mail:			
Address:	5383 Hollister Ave., PO Box 6770 Santa Barbara, CA 93160-6770		

Description: AdaQuest static analysis examines branching structures, identifies logic errors, and performs audits against programming standards. AdaQuest dynamic analysis identifies unexecuted code and aids modification of the test data for better test coverage.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Reuse, Auditor, Complexity Measurer, Coverage/Frequency Analyzer, Maintainability Analyzer, Reliability Analyzer, Reusable Components Identifier, Reverse Engineering, Size Measurer, Structure Checker, Test Data Generator
Features: SLOC Actual
Languages Supported: Ada
Configurations: ULTRIX, DEC/ULTRIX, DECstation, VAX/VMS

Tool: AdaRAID

Version:	MD-10	Release Date:	10/01/92
Number Sold:	10+	Single User Price:	$6,000+
Report Date:	1/04/93	Report Updated:	6/01/94
Training Available			
Evaluation Copy Available		Site License Available	

Vendor: Proprietary Software Systems, Inc.

POC:	Richard Gilinsky		
Phone:	310-394-5233	Fax:	310-393-3122
E-mail:			
Address:	429 Santa Monica Blvd., Suite 430 Santa Monica, CA 90401		

Description: AdaRAID is a symbolic debugger that simplifies the task of developing and maintaining Ada software that supports multiple CPUs, breakpoints, instruction counts and memory accesses, and symbolic patching using DECWindows.
Classification: Coding, Testing, Quality Assurance, Software Engineering Environment, Coverage/Frequency Analyzer, Debugger, Performance/Timing Analyzer, Simulator, Status Displayer
Features:
Languages Supported: Ada, Assembler, JOVIAL
Configurations: DEC 10, IBM/MVS, IBM/VM, IBM/VS1, VAX/VMS

Tool: AdaReVu
Vendor: Science Applications Int'l Corp.

Version:	1.0	Release Date:	5/01/94	POC:	David A. Workman		
Number Sold:	–	Single User Price:	$900/Seat	Phone:	407-282-6700 ext 260	Fax:	407-381-8436
Report Date:	1/03/94	Report Updated:	6/30/94	E-mail:	workmand@orlva.saic.com		
Training Available				Address:	3045 Technology Parkway Orlando, FL 32826-3299		

Description: AdaReVu automates the assessment of Ada source code with respect to an implemented set of software quality guidelines. The implemented guidelines are a subset of those published by the software productivity consortium in their Ada quality and style guidelines.
Classification: Coding, Quality Assurance, Metrics, Reengineering, Reuse, Auditor, Defect/Change Tracker, Maintainability Analyzer, Reliability Analyzer, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations: IBM RS/6000/AIX

Tool: AdaTEST
Vendor: IPL Information Processing Ltd.

Version:	2.3	Release Date:	2/01/93	POC:	Ian Gilchrist		
Number Sold:	20	Single User Price:	$15,000	Phone:	04-225-444-888	Fax:	04-225-444-400
Report Date:	1/27/93	Report Updated:	6/30/94	E-mail:			
Training Available		Newsletter Available		Address:	Eveleigh House, Grove St.		
Evaluation Copy Available		Site License Available			Bath, BA1 5LR England, UK		

Description: AdaTEST provides dynamic testing facilities integrated with test coverage analysis and static analysis. This tool also obtains multitasking coverage.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Complexity Measurer, Coverage/Frequency Analyzer, Debugger, Performance/Timing Analyzer, Size Measurer, Syntax & Semantics Analyzer, Test Execution Manager, Test Instrumenter
Features: SLOC Actuals
Languages Supported: Ada
Configurations: Encore, Rational, Sun/Sun OS, VAX/VMS

Tool: AdaTune
Vendor: ALSYS, Inc.

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	617-270-0030	Fax:	619-270-6882
Report Date:	1/04/93	Report Updated:	12/22/93	E-mail:			
				Address:	67 S. Bedford St. Burlington, MA 01803-5152		

Description: AdaTune is a performance/timing analyzer and a coverage/frequency analyzer that tunes up application code for improved performance.
Classification: Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer, Performance/Timing Analyzer, Status Displayer
Features:
Languages Supported: Ada
Configurations: DECstation/ULTRIX, HP/HP-UX, IBM/AIX, IBM/MVS, IBM/VM/CMS, PC/MS-DOS, PC/OS/2, PC/UNIX, PC/XENIX, RISC 6000, Sun/Sun OS, VAX/VMS

Tool: AdaVerify
Vendor: ALSYS, Inc.

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	617-270-0030	Fax:	619-270-6882
Report Date:	2/08/93	Report Updated:		E-mail:			
				Address:	67 S. Bedford St. Burlington, MA 01803-5152		

Description: AdaVerify is a high-speed Ada syntax checker.
Classification: Coding, Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations: DECstation/ULTRIX, HP/HP-UX, IBM/AIX, IBM/MVS/XA, IBM/VM/CMS, Mac/Mac OS, PC/MS-DOS, PC/OS/2, PC/UNIX, PC/XENIX, RISC 6000, Sun/Sun OS, VAX/VMS

Tool: ADAXPA
Version: 2.4 | Release Date: 1/01/91
Number Sold: 25+ | Single User Price: $13,000-$23,000
Report Date: 1/04/93 | Report Updated: 6/30/94
Training Available | Newsletter Available

Vendor: Concurrent Computer Corp.
POC: Linda G. Lewis
Phone: 908-758-7000 | Fax: 908-630-4833
E-mail:
Address: 2 Crescent Pl.
Oceanport, NJ 07757

Description: ADAXPA assists programmers in identifying how the program parts utilize processor time by monitoring modules and address ranges. Operates under CASEmate and CASE integration framework, which provides an environment for software development.
Classification: Testing, Performance/Timing Analyzer, Run-Time Error Checker
Features:
Languages Supported: Ada
Configurations: Series 3200-OS/32 R9.1

Tool: ADAXREF
Version: 2.4 | Release Date: 2/01/91
Number Sold: 25+ | Single User Price: $15,000-$24,000
Report Date: 1/27/93 | Report Updated: 5/13/94
Training Available | Newsletter Available

Vendor: Concurrent Computer Corp.
POC: Linda G. Lewis
Phone: 908-758-7000 | Fax: 908-630-4833
E-mail:
Address: 2 Crescent Pl.
oceanport, NJ 07757

Description: ADAXREF builds a cross reference list for a single compilation unit. Operates in a CASEmate integration framework environment to provide a simple environment for software development.
Classification: Design, Coding, Cross Referencing Tool
Features:
Languages Supported: Ada
Configurations: 6000/7000/8000; Series 3200-OS/32 r9.1

Tool: Advanced Debugging System (ADS)
Version: | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 8/05/93 | Report Updated: 6/30/94
Evaluation Copy Available

Vendor: Gary Bergman Associates, Inc.
POC: Robert A. Naiburg
Phone: 800-438-2377 | Fax: 908-846-3515
E-mail:
Address: 14 Hickory Ln.
N. Brunswick, NJ 08902

Description: ADS uncover hidden storage violations, coding errors, and design flaws that can make useful applications unreliable. It also adheres to CICS standards before they go into production.
Classification: Coding, Testing, Quality Assurance, Debugger, Run-Time Error Checker
Features:
Languages Supported: Assembler, CICS, COBOL, COBOL II, PL/1
Configurations: MVS, VSE

Tool: ADW/Inspector

Version:	–	Release Date:	
Number Sold:	–	Single User Price:	$18K-27K
Report Date:	2/08/93	Report Updated:	6/30/94
Training Available			

Vendor: KnowledgeWare, Inc.

POC:	Technical Support		
Phone:	703-506-0800	Fax:	703-506-0154
E-mail:			
Address:	1650 Tysons Blvd., Suite 800 McLean, VA 22102		

Description: INSPECTOR is a management-oriented quality assurance tool for COBOL systems. It analyzes COBOL systems at the program level and produces management reports showing the quality, structure, and adherence to standards of the program within those systems. INSPECTOR analyzes COBOL 68, COBOL 74, VS COBOL II, and command level CICS programs against over 160 metrics, including McCabe's Cyclomatic Complexity and Essential Complexity Metrics. The product can measure program structure, complexity, size, and potential problem areas, as well as providing counts on COBOL verbs, usage of specific commands, etc. The measures it generates can be used to assist in determining which systems offer the greatest payback from reengineering. INSPECTOR is part of the vendor's Reengineering Tool Set and is a companion product to PINPOINT.

Classification: Coding, Quality Assurance, Metrics, Reengineering, Assertion Analyzer, Auditor, Complexity Measurer, Size Measurer

Features: SLOC Actuals

Languages Supported: COBOL

Configurations: MVS, VM, IBM

Tool: ADW/Pinpoint

Version:	–	Release Date:	
Number Sold:	–	Single User Price:	(Contact Vendor)
Report Date:	2/08/93	Report Updated:	6/30/94

Vendor: KnowledgeWare, Inc.

POC:	Technical Support		
Phone:	703-506-0800	Fax:	703-506-0154
E-mail:			
Address:	1650 Tysons Blvd., Suite 800 McLean, VA 22102		

Description: ADW/Pinpoint makes previously slow tasks take less time. It has detailed analysis results, which makes it easy for the user to work on specific tasks rapidly.

Classification: Coding, Testing, Quality Assurance, Reengineering, Auditor, Coverage/Frequency Analyzer, Performance/Timing Analyzer, Reverse Engineering, Syntax & Semantics Analyzer

Features:

Languages Supported: COBOL

Configurations: IBM/MVS

Tool: Allegro Composer Development Environment

Version:	2.0	Release Date:	
Number Sold:	–	Single User Price:	(Contact Vendor)
Report Date:	2/08/93	Report Updated:	6/30/94

Vendor: Franz Inc.

POC:	Sarah Molyneux		
Phone:	800-333-7260	Fax:	510-548-8253
E-mail:	sarah@franz.com		
Address:	1995 University Avenue Berkeley, CA 94704		

Description: Composer is an interactive window-based program development environment for developing and debugging common Lisp programs. It features a tightly integrated set of development tools and performance analysis tools to improve the code's efficiency.

Classification: System Simulation, Coding, Testing, Debugger, LISP Language Tool, Performance/Timing Analyzer

Features:

Languages Supported: LISP

Configurations: DECstation/ULTRIX, HP/HP-UX, RISC 6000/AIX, SGraphics/UNIX, Solbourne/Sun OS, Sun/Sun OS

Tool: Amadeus
Version: 2.1 Release Date: 11/01/93
Number Sold: -- Single User Price: $600+
Report Date: 1/31/94 Report Updated: 6/30/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Amadeus Software Research, Inc.
POC: Richard Selby
Phone: 714-725-6400 Fax: 714-725-6411
E-mail: amadeus-info@amadeus.com
Address: 12 Own Court Rd.
Irvine, CA 92715

Description: Amadeus is an automated software metric collection, analysis, reporting, graphing, and prediction system for software process and product analysis and improvement.
Classification: Coding, Testing, Project Management, Quality Assurance, Metrics, Complexity Measurer, Data Reducer & Analyzer, Defect/Change Tracker, Reliability Analyzer, Size Measurer
Features: Automatic Data Collection, SLOC Actuals
Languages Supported: Ada, C, C++, COBOL, CSH, FORTRAN
Configurations: DEC/OSF/1, HP/HP-UX, IBM 6000/AIX, PC/Windows, Sun/Solaris2.1, Sun/Sun OS, VAX/VMS

Tool: Anacat
Version: 3.0 Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 1/04/93 Report Updated: 5/23/94
Training Available Newsletter Available
Evaluation Copy Available

Vendor: EEsof, Inc.
POC: Walt Best
Phone: 714-725-6400 Fax: 714-725-6411
E-mail: amadeus-info@amadeus.com
Address: 12 Own Court Rd.
Irvine, CA 92715

Description: Anacat is an advanced computer-aided test (CAT) software program for the calibration, measurement, management, de-embedding, and embedding of vector network analyzer (VNA) data.
Classification: Testing, Network Analyzer, Performance/Timing Analyzer, Test Execution Manager
Features:
Languages Supported: --
Configurations: MS-DOS and HP300/400 (HP-UX)

Tool: Analyzer
Version: Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 2/08/93 Report Updated:

Vendor: Aldon Computer Group
POC: Technical Support
Phone: 510-839-3535 Fax: 510-839-2894
E-mail:
Address: 401 15th St.
Oakland, CA 94612

Description: The Analyzer product is a test coverage monitor tool that identifies and measures how effective software testing is.
Classification: Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer
Features:
Languages Supported: --
Configurations:

Tool: ANSWER:Testpro for DOS
Version: 5.3 Release Date: 9/10/93
Number Sold: 3000 Single User Price: $4,000
Report Date: 2/04/93 Report Updated: 6/30/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Sterling Software, Inc.
POC: Richard Brounstein
Phone: 714-725-6400 Fax: 714-725-6411
E-mail: amadeus-info@amadeus.com
Address: 12 Own Court Rd.
Irvine, CA 92715

Description: This is a PC-based tool that automates testing of mainframe, mini, or PC programs. It allows programmers to capture and replay test scenarios.
Classification: Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager, Test Planner
Features: Text-based Testing
Languages Supported: All
Configurations: PC/MS-DOS

Tool: ANSWER:Testpro for Windows
Vendor: Sterling Software, Inc.

Version:	2.1	Release Date:	3/18/93	POC:	Shelia Edwards		
Number Sold:	200	Single User Price:	(Contact Vendor)	Phone:	818-716-1616	Fax:	818-716-5998
Report Date:	12/29/93	Report Updated:	6/30/94	E-mail:			
Training Available				Address:	5900 Canoga Ave., PO Box 4237 Woodland Hills, CA 91367		

Description: Testpro for Windows, is a PC-based designed to automate test execution, analysis and detailed report generation.
Classification: Testing, Documentation, Capture-Replay Tool, Test Data Generator
Features: GUI-based Testing
Languages Supported: --
Configurations: PC/Windows

Tool: Apex
Vendor: Rational Software, Corp.

Version:		Release Date:		POC:	Dudley McBride		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	303-986-2006	Fax:	303-986-0205
Report Date:	6/08/94	Report Updated:	6/08/94	E-mail:	dud@rational.com		
Training Available				Address:	165 South Union Blvd., Suite 604		
Evaluation Copy Available					Lakewood, CO 80228		

Description: Apex is a tightly integrated interactive and highly automated software engineering environments.
Classification: System Simulation, Requirements Trace, Design, Coding, Requirements Analysis, Testing, Quality Assurance, Software Engineering Environment, Compiler, Cross Referencing Tool, Linker, Optimizer, Recompiler, Structure Checker
Features:
Languages Supported: Ada
Configurations: IBM/AIX, Sun/Solaris2.1, Sun/Sun OS

Tool: APMPower
Vendor: Programart Corp.

Version:	--	Release Date:		POC:	Alexander J. Salop		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	617-661-3020	Fax:	617-864-6558
Report Date:	2/25/93	Report Updated:	6/01/94	E-mail:			
				Address:	124 Mount Auburn St, Suite 240S Cambridge, MA 02138		

Description: APMPower empowers a broad range of IS professionals to measure, manage, and improve application performance. It provides performance hints, a database of module descriptions, and guided methods for detecting, diagnosing, and resolving performance issues.
Classification: Testing, Quality Assurance, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: OS/TSO, IBM/OS/2

Tool: Application Browser
Vendor: Hypersoft Corp.

Version:	3.2	Release Date:	1/01/92	POC:	Barbara Bersack		
Number Sold:	45	Single User Price:	$4,000-$6,250	Phone:	617-864-8860	Fax:	617-864-3711
Report Date:	1/04/93	Report Updated:	6/30/94	E-mail:			
				Address:	675 Massachusetts Ave.		
Evaluation Copy Available		Site License Available			Cambridge, MA 02139		

Description: Application Browser automatically produces technical documentation from COBOL programs. It helps analyze and document applications.
Classification: Coding, Documentation, Reengineering, Cross Referencing Tool, Reverse Engineering, Structure Checker
Features:
Languages Supported: COBOL
Configurations: IBM PC/compatible - MS DOS, VAX - VMS

Tool: **Application Testing Facility (ATF)**
Version: 1.0 Release Date: 1/01/91
Number Sold: -- Single User Price: $2,500-$25,000
Report Date: 1/04/93 Report Updated: 6/30/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: **Trinzic Corp.**
POC: Mark McCain
Phone: 415-328-9595 Fax: 415-321-7728
E-mail:
Address: 101 University Ave., 4th Floor
Palo Alto, CA 94301

Description: ATF delivers complete regression testing facilities for Aion Development System applications. ATF supports generating a benchmark from a working knowledge base, creating a test case from a modified knowledge base and comparing the results.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager
Features: GUI-based Testing
Languages Supported: --
Configurations: UNIX, IBM/MVS, IBM/VMS, PC/MS-DOS, PC/OS/2

Tool: **ARC SADCA**
Version: Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 8/04/93 Report Updated: 6/30/94

Vendor: **Optimization Technology, Inc.**
POC: Trace D. Parish
Phone: 205-721-1288 Fax: 205-837-9682
E-mail: parish@oti-hsv.com
Address: 5021 Technology Drive, Suite 1-A
Huntsville, AL 35805

Description: ARC SADCA is a multilingual automated software development, testing and maintenance tool. It contains translators for the C, Ada, and FORTRAN languages and has been designed with a language independent tool set facilitating a rapid and inexpensive path for the creation and linking of additional language translators.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Code Change Monitor, Complexity Measurer, Reverse Engineering, Size Measurer, Source Code Translator, Structure Checker
Features:
Languages Supported: Ada, C, FORTRAN
Configurations: Sun

Tool: **Architecture Design & Assessment System (Adas)**
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 4/08/93 Report Updated: 7/06/94

Vendor: **Research Triangle Institute**
POC: Technical Support
Phone: 919-541-7436 Fax:
E-mail:
Address: P.O. Box 12194
Research Triangle Park, NC 27709-2194

Description: ADAS is an integrated set of computer-aided engineering tools that support the design and analysis of electronic systems. ADAS captures software design at the data flow level and hardware designs at the block diagram level.
Classification: Coding, Reengineering, Reverse Engineering, Simulator, Structure Checker
Features:
Languages Supported: --
Configurations: Apollo, PC/AIX, Sun/Sun OS, VAXstation/ULTRIX, VAXstation/VMS

Tool: **AsmFlow Professional**
Version: 3.0 Release Date: 7/01/93
Number Sold: 5,000+ Single User Price: $200
Report Date: 1/28/93 Report Updated: 6/30/94
Site License Available

Vendor: **Quantasm Corp.**
POC: Mike Schmit
Phone: 408-244-6826 Fax: 408-244-7268
E-mail:
Address: 19672 Stevens Creek Blvd., Suite 307
Cupertino, CA 95014

Description: This product provides assembly language source code analysis, flowcharting, tree diagrams, data Xref, and register analysis for 80 x 86, 8051, z-80, 8085, 68HC11, 6303, 6502, 68HC05, 1750A, 8096 and 680X0.
Classification: Documentation, Reengineering, Cross Referencing Tool, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: Assembler
Configurations: PC/MS-DOS

Tool: Auto V&V/Ada
Vendor: Intl. Software Systems, Inc.

Version: – | Release Date: | Number Sold: – | Single User Price: (Contact Vendor) | Report Date: 2/08/93 | Report Updated:

POC: James B. Nelson
Phone: 512-338-5700 Fax: 512-338-5757
E-mail: nelson@issi.com
Address: 9430 Research Blvd. Echelon IV, Suite 250
Austin, TX 78759

Description: Auto V&V/Ada uses the Ada source code to analyze commonly occurring problems not reported by the compiler that can cause problems during run time.
Classification: Coding, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations:

Tool: AutoAnalyzer
Vendor: Advanced Software Automation, Inc.

Version: 2.1 | Release Date: 4/01/92 | Number Sold: 250 | Single User Price: $7,450 + 1,125 ma | Report Date: 1/26/93 | Report Updated: 6/30/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

POC: Lynn Allen
Phone: 512-338-5700 Fax: 512-338-5757
E-mail: nelson@issi.com
Address: 9430 Research Blvd. Echelon IV, Suite 250
Austin, TX 78759

Description: AutoAnalyzer provides a testing and software maintenance environment for software engineers. Builds an interactive structure chart of source code, traces use of global variables, measures and displays test coverage analysis, performance information.
Classification: Design, Coding, Testing, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Coverage/Frequency Analyzer, Debugger, Performance/Timing Analyzer, Reliability Analyzer, Reverse Engineering, Size Measurer, Structure Checker, Test Instrumenter
Features: SLOC Actuals
Languages Supported: C, C++, FORTRAN
Configurations: DEC, HP, IBM, Sun

Tool: AutoDiagrammer
Vendor: Advanced Software Automation, Inc.

Version: – | Release Date: | Number Sold: – | Single User Price: (Contact Vendor) | Report Date: 1/04/93 | Report Updated:

POC: Lynn Allen
Phone: 512-338-5700 Fax: 512-338-5757
E-mail: nelson@issi.com
Address: 9430 Research Blvd. Echelon IV, Suite 250
Austin, TX 78759

Description: AutoDiagrammer, straight from source code, generates a low-level detailed procedural logic diagram and a high-level program tree diagram - AutoDiagrammer also will link these together.
Classification: Coding, Reengineering, Reverse Engineering, Structure Checker
Features:
Languages Supported: Ada, C, FORTRAN
Configurations: DEC/ULTRIX, Sun/Sun OS, VAX/ULTRIX

Tool: AutoFlow
Vendor: AutoCASE Technology

Version: 1.0 | Release Date: 2/01/92 | Number Sold: – | Single User Price: $9,950 | Report Date: 1/27/93 | Report Updated: 6/30/94
Evaluation Copy Available | Site License Available

POC: Allen Chang
Phone: 408-446-2273 Fax: 408-255-8228
E-mail:
Address: 10133 S. Portal Ave.
Cupertino, CA 95014

Description: Auto Flow generates flowcharts automatically from existing C source code.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Reuse, Coverage/Frequency Analyzer, Reusable Components Identifier, Reverse Engineering, Structure Checker
Features:
Languages Supported: C
Configurations: PC/Dos, OS/2

Tool: **Automated Documentation System (ADS)**
Version: 7.0 Release Date: 11/01/92
Number Sold: 15+ Single User Price: $16,000-$32,000
Report Date: 1/06/93 Report Updated: 6/30/94
Evaluation Copy Available Site License Available

Vendor: **A+ Software, Inc.**
POC: Robert Ballway
Phone: 315-685-6918 Fax: 315-685-6076
E-mail:
Address: 16 Academy St.
Skaneateles, NY 13152

Description: ADS is an ISPF menu-driven interactive and batch job and systems documentation tool. It features JCL syntax checking, run-time error analysis, JCL reformatting, Utilities, numerous cross-reference reports, load-module analysis, etc.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Auditor, Cross Referencing Tool, Redocumenter, Reformatter, Run-Time Error Checker, Session Documenter, Structure Checker
Features:
Languages Supported: JCL
Configurations: MVS operating systems

Tool: **Automated Software Test Facility**
Version: Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 1/04/93 Report Updated: 6/30/94

Vendor: **Intl. Business Machines Corp.**
POC: Technical Support
Phone: 801-328-6763 Fax: 801-328-6692
E-mail:
Address: 420 E. So. Temple
Salt Lake City, UT 84111-1391

Description: The Automated Software Test Facility enables on-line software developers to further develop functional and regression testing.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager
Features:
Languages Supported: --
Configurations: IBM

Tool: **Automated Test Facility (ATF)**
Version: 2.0 Release Date: 8/10/92
Number Sold: 75 Single User Price: $16,500 min.
Report Date: 1/04/93 Report Updated: 6/30/94
Training Available
Site License Available

Vendor: **Softbridge, Inc.**
POC: Anthony Roush
Phone: 800-955-9190 Fax: --
E-mail:
Address: 125 Cambridge Park Dr.
Cambridge, MA 02140

Description: ATF enables implementation of unattended testing of OS/2 and Windows client-server app. Test plans are implemented in the ATF's robust scripting language on the ATF executive. The tests are driven across a LAN using NETBIOS/IPX to the workstation with the application.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Network Simulator, Performance/Timing Analyzer, Test Execution Manager
Features:
Languages Supported: All
Configurations: OS/2, PC/Window 3.0

Tool: **Automator QA**
Version: 1.3 Release Date: 9/01/90
Number Sold: 1,500+ Single User Price: $5,495
Report Date: 1/04/93 Report Updated: 6/30/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: **Direct Technology**
POC: Tech. Support Sales Dept.
Phone: 800-486-7576 Fax: 212-529-4941
E-mail:
Address: 10 E. 21st St., 11th Floor
New York, NY 10010

Description: Automator QA is an automatic operator or software robot, equipped with a comprehensive quality assurance testing ability. Develops test scripts that contain recovery routines. Combines an intelligent scripting language with four testing methodologies.
Classification: Coding, Testing, Quality Assurance, Reuse, Capture-Replay Tool, Test Execution Manager
Features: Text-based Testing
Languages Supported: All
Configurations: PC/MS-DOS

Tool: **Automator QA (Windows Edition**)
Vendor: **Direct Technology**

Version:	1.2	Release Date:	10/01/93	POC:	Tech. Support Sales Dept.		
Number Sold:	–	Single User Price:	$7,495	Phone:	800-486-7576	Fax:	212-529-4941
Report Date:	1/06/94	Report Updated:	6/30/94	E-mail:			
Training Available		Newsletter Available		Address:	10 E. 21st St., 11th Floor		
Evaluation Copy Available		Site License Available			New York, NY 10010		

Description: Automatic checking of Windows objects such as dialogs or menus, extensive reporting and analysis of test results, intelligent screen recognition, bitmap checking, intelligent identify facility and advanced test management.
Classification: Testing, Quality Assurance, Reuse, Capture-Replay Tool, Test Execution Manager
Features: GUI-based Testing
Languages Supported: All
Configurations: Windows, PC/MS-DOS

Tool: **Automator QA with Navigator**
Vendor: **Direct Technology**

Version:	2.0	Release Date:	1/01/91	POC:	Tech. Support Sales Dept.		
Number Sold:	700	Single User Price:	$7,495	Phone:	800-486-7576	Fax:	212-529-4941
Report Date:	1/04/93	Report Updated:	5/23/94	E-mail:			
Training Available		Newsletter Available		Address:	10 E. 21st St., 11th Floor		
Evaluation Copy Available		Site License Available			New York, NY 10010		

Description: Enables software quality assurance personnel to increase productivity and reliability through automated testing. It has an error recovery and test management features.
Classification: Testing, Quality Assurance, Reuse, Capture-Replay Tool, Test Execution Manager
Features:
Languages Supported: All
Configurations: PC/MS-DOS

Tool: **AutoStructureChart**
Vendor: **Advanced Software Automation, Inc.**

Version:	–	Release Date:		POC:	Lynn Allen		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-486-7576	Fax:	212-529-4941
Report Date:	1/04/93	Report Updated:	6/30/94	E-mail:			
				Address:	10 E. 21st St., 11th Floor		
					New York, NY 10010		

Description: AutoStructureChart provides an interactive development environment for software reengineering and maintenance; it generates a full and organized hierarchical structure chart directly from source code.
Classification: Reengineering, Reverse Engineering, Structure Checker
Features:
Languages Supported: Ada, C, FORTRAN
Configurations: Apollo/SR, DECstation/ULTRIX, Sun/Sun OS, VAX/ULTRIX

Tool: **AutoTester**
Vendor: **AutoTester, Inc.**

Version:	2.0	Release Date:	5/01/94	POC:	K. Patrick Lee		
Number Sold:	5,000	Single User Price:	$5,000	Phone:	214-363-6181 ext.217	Fax:	214-750-9668
Report Date:	1/04/93	Report Updated:	6/30/94	E-mail:			
Training Available		Newsletter Available		Address:	8150 N. Central Expressway, Suite 1300		
Evaluation Copy Available		Site License Available			Dallas, TX 75206		

Description: AutoTester runs on the PC and can test application software running on mainframes minis or PCs regardless of the operating system or code language. AutoTester uses a structured testing approach to automate the manual test process.
Classification: Testing, Capture-Replay Tool, Data Extractor, Test Execution Manager, Test Instrumenter
Features: Text-based Testing
Languages Supported: All
Configurations: MS-DOS, OS/2

Tool: AutoTester For OS/2
Version: 2.0 Release Date: 8/01/92
Number Sold: 325 Single User Price: $3800(GSA)
Report Date: 12/02/93 Report Updated: 6/30/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: AutoTester, Inc.
POC: K. Patrick Lee
Phone: 214-363-6181 ext.217 Fax: 214-750-9668
E-mail:
Address: 8150 N. Central Expressway, Suite 1300
Dallas, TX 75206

Description: Application testing tool designed for OS/2-based applications
Classification: Coding, Testing, Documentation, Project Management, Quality Assurance, Reengineering, Reuse, Assertion Analyzer, Auditor, Data Extractor, Emulator, Test Execution Manager, Test Instrumenter
Features: Automatic Scripting, GUI-based Testing
Languages Supported: All
Configurations: OS/2

Tool: AutoTester for Windows
Version: 2.0 Release Date: 2/01/92
Number Sold: 350 Single User Price: $3,800 (GSA)
Report Date: 12/02/93 Report Updated: 6/30/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: AutoTester, Inc.
POC: K. Patrick Lee
Phone: 214-363-6181 ext.217 Fax: 214-750-9668
E-mail:
Address: 8150 N. Central Expressway, Suite 1300
Dallas, TX 75206

Description: Application testing tool designed for Ms-Windows-based system, including access to host based data.
Classification: Coding, Testing, Project Management, Quality Assurance, Reengineering, Reuse, Auditor, Capture-Replay Tool, Data Extractor, Performance/Timing Analyzer, Test Execution Manager
Features: Automatic Scripting, GUI-based Testing
Languages Supported: All
Configurations: Windows

Tool: AutoTester Plus
Version: 1.3 Release Date: 1/01/93
Number Sold: 275 Single User Price: (Contact Vendor)
Report Date: 12/02/93 Report Updated: 6/30/94
Training Available Newsletter Available
Site License Available

Vendor: AutoTester, Inc.
POC: K. Patrick Lee
Phone: 214-363-6181 ext.217 Fax: 214-750-9668
E-mail:
Address: 8150 N. Central Expressway, Suite 1300
Dallas, TX 75206

Description: Automates a QA or Testing function on department multi-user solution. Isolates the set-up and maintenance functions. Delivered with on-site pilot project, training and implementation services.
Classification: Coding, Requirements Analysis, Testing, Documentation, Quality Assurance, Reengineering, Reuse, Auditor, Capture-Replay Tool, Defect/Change Tracker, Performance/Timing Analyzer, Test Execution Manager, Test Instrumenter
Features: Automatic Scripting, Text-based Testing
Languages Supported: All
Configurations: PC

Tool: Basis Branch Analyzer (BBA)
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 1/04/93 Report Updated: 6/30/94

Vendor: Hewlett-Packard
POC: Technical Support
Phone: 818-505-5600 Fax: --
E-mail:
Address: 19447 Pruneridge Ave.
Cupertino, CA 95014

Description: BBA is a test coverage tool that measures the effectiveness of the software tests within the cross development environment. The BBA used the hardware or instruction set simulator to produce test metrics.
Classification: Testing, Quality Assurance, Coverage/Frequency Analyzer
Features:
Languages Supported: C
Configurations: HP-9000/HP-UX

Tool: Battlemap Analysis Tool (BAT) **Vendor:** McCabe & Assoc., Inc.

Version:	4.01	Release Date:	8/31/93	POC:	Tim McCabe		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-634-0150	Fax:	410-995-1528
Report Date:	1/26/93	Report Updated:	6/02/94	E-mail:			
Training Available		Newsletter Available		Address:	5501 Twin Knolls Rd., Suite 111		
Evaluation Copy Available		Site License Available			Columbia, MD 21045		

Description: BAT is a reverse engineering and maintenance tool that analyzes source code at the system level and computes the McCabe essential complexity metric. Monitors the effect that changes to modules and insertion of new modules have on a system.
Classification: Coding, Testing, Reengineering, Complexity Measurer, Reverse Engineering, Size Measurer, Structure Checker, Test Data Generator
Features: SLOC Actuals
Languages Supported: Ada, Assembler, C, C++, COBOL, FORTRAN, Pascal, PDL
Configurations: UNIX, PC/MS-DOS, HP/Softbench, IBM Workbench, Motif, Openlook

Tool: BBN/Catalyst Software **Vendor:** BBN Systems and Technologies

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	714-380-3785	Fax:	714-380-3785
Report Date:	6/30/93	Report Updated:	6/30/94	E-mail:			
				Address:	25381-G Alicia Pkwy., Suite3		
					Laguna Hills, CA 92653		

Description: The BBN/Catalyst Software product automates each phase of a process study, which includes process analysis, design of experiments, interpretation of results, and data analysis. This allows you to immediately see how each factor affects each response.
Classification: Design, Testing, Data Reducer & Analyzer, Performance/Timing Analyzer
Features:
Languages Supported: –
Configurations: VAX/VMS

Tool: Bounds-Checker **Vendor:** Nu-Mega Technologies

Version:	1.2	Release Date:		POC:	Scott Gagnone		
Number Sold:	–	Single User Price:	$249	Phone:	603-889-2386	Fax:	603-889-1135
Report Date:	1/04/93	Report Updated:	6/02/94	E-mail:			
				Address:	PO Box 7780		
					Nashua, NH 03060-7607		

Description: Bounds-Checker is a memory protection tool. It locates and verifies memory overwrites and out-of-bounds memory accesses automatically.
Classification: Coding, Testing, Quality Assurance, Debugger, Run-Time Error Checker
Features:
Languages Supported: C
Configurations: PC/MS-DOS

Tool: BugBase **Vendor:** Archimedes Software, Inc.

Version:		Release Date:	9/01/93	POC:	Technical Support		
Number Sold:	–	Single User Price:	$499	Phone:	603-889-2386	Fax:	603-889-1135
Report Date:	1/03/94	Report Updated:	5/16/94	E-mail:			
				Address:	PO Box 7780		
					Nashua, NH 03060-7607		

Description: BugBase is a software defect tracking tool. It makes it easy to create and maintain database that track software defects encountered in the product.
Classification: Testing, Quality Assurance, Defect/Change Tracker
Features:
Languages Supported:
Configurations: PC/Windows

Tool: **BugFinder/Ada**
Version: 1.0 Release Date: 6/01/93
Number Sold: 0 Single User Price: $8,500
Report Date: 6/28/93 Report Updated: 6/30/94
Training Available
Evaluation Copy Available Site License Available

Vendor: **Software Systems Design, Inc.**
POC: Dr. Thomas S. Radi
Phone: 714-625-6147 Fax: 714-626-9667
E-mail:
Address: 3627 Padua Ave.
Claremont, CA 91711

Description: BugFinder/Ada allows the user to see those points in Ada code that may result in execution mistakes. It analyzes source code, and searches any paths for errors. It will show the user the system-wide ramifications of the errors.
Classification: Design, Coding, Testing, Reengineering, Defect/Change Tracker, Structure Checker
Features:
Languages Supported: Ada, C
Configurations: UNIX workstation, VAX/VMS

Tool: **Business BenchMark**
Version: 2.2 Release Date: 8/15/92
Number Sold: 7,130 Single User Price: $640/month
Report Date: 1/04/93 Report Updated: 6/02/94
Training Available
Site License Available

Vendor: **Neal Nelson & Assoc.**
POC: Michael J. Dandar
Phone: 703-448-1454 Fax: 703-442-0846
E-mail:
Address: 1420 Spring Hill Rd.
McLean, VA 22102

Description: BenchMark is an in-depth hardware/software testing facility, where the program tests six different areas via 19+ tests. This gives a true benchmark for comparison on your Unix-based system.
Classification: Testing, Configuration Management, Quality Assurance, Performance/Timing Analyzer, Test Execution Manager
Features:
Languages Supported: --
Configurations: UNIX

Tool: **BUSTER Test Management System**
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 2/26/93 Report Updated: 6/30/94

Vendor: **AT&T, Performance Analysis and Tools**
POC: Ed Kruse
Phone: 708-979-0120 Fax: 708-979-8431
E-mail:
Address: 1100 E. Warrenville Road, Rm 1F-367
Naperville, IL 60566

Description: BUSTER is a test administration and execution system that can solve common testing problems by using the standard test case format based on IEEE 829, a test database, etc. It is a combination database and test storage and retrieval system.
Classification: Testing, Configuration Management, Quality Assurance, Test Execution Manager
Features:
Languages Supported: --
Configurations: UNIX

Tool: **C Design and Documentation Language (CDADL)**
Version: 1.2 Release Date: 4/01/92
Number Sold: 6+ Single User Price: (Contact Vendor)
Report Date: 2/04/93 Report Updated: 7/06/94
Evaluation Copy Available Site License Available

Vendor: **Software Systems Design, Inc.**
POC: Dr. Thomas S. Radi
Phone: 714-625-6147 Fax: 714-626-9667
E-mail:
Address: 3627 Padua Ave.
Claremont, CA 91711

Description: CDADL helps programming mainly by improving design quality and designer productivity. It analyzes the pseudocode and executable C code to find errors and to make a printed output report that simplifies the design.
Classification: Design, Coding, Documentation, Metrics, Reengineering, Software Engineering Environment, Complexity Measurer, Cross Referencing Tool, Defect/Change Tracker, Redocumenter, Reformatter, Reverse Engineering, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: C
Configurations: DG, HP/VMS, PC/MS-DOS, RISC 6000, Sun/VMS, UNIX/VMS, VAX/VMS

Tool: C Source Analyzer
Vendor: Advanced Software Automation, Inc.

Version:	--	Release Date:		POC:	Lynn Allen		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	714-625-6147	Fax:	714-626-9667
Report Date:	1/04/93	Report Updated:	6/30/94	E-mail:			
				Address:	3627 Padua Ave.		
					Claremont, CA 91711		

Description: The C Source Analyzer produces CaseD diagrams directly from C source programs. It's not limited by the diagramming file size, is menu or command driven, and links the main program and subprograms/functions with relative indicated positions.
Classification: Coding, Reengineering, Linker, Structure Checker
Features:
Languages Supported: --
Configurations:

Tool: C->it (see.it)
Vendor: Cater Software

Version:	1.01	Release Date:	2/01/93	POC:	Tech. Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	503-581-5622	Fax:	503-362-2318
Report Date:	8/24/93	Report Updated:	5/18/94	E-mail:			
				Address:	525 Ferry St., SE, Suite304C		
					Salem, OR 97301		

Description: C->it is an interactive tool that can assist in software development. Using source code analysis, it creates a model of your C program. Versatile query language understands the relationships between the high-level components that make up the program.
Classification: Coding, Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: MS-DOS, UNIX

Tool: C-CALL
Vendor: Software Blacksmiths, Inc.

Version:	5.1	Release Date:	11/01/93	POC:	Laura Searle		
Number Sold:	5,000+	Single User Price:	$69	Phone:	905-858-4466	Fax:	905-858-4466
Report Date:	4/07/93	Report Updated:	5/24/94	E-mail:			
				Address:	6064 Saint Ives Way		
Evaluation Copy Available		Site License Available			Mississauga, ON L5N-4M1 Canada		

Description: C-Call analyzes and documents the caller/called function hierarchy of C and C++ programs. It produces a graphic tree diagram and function cross-reference tables, and a function-versus-files table of content. Part of the C-DOC tool set.
Classification: Coding, Documentation, Reengineering, Cross Referencing Tool, Reverse Engineering, Structure Checker
Features:
Languages Supported: C, C++
Configurations: MS-DOS, PC/OS2

Tool: C-Cover
Vendor: Bullseye Software

Version:	2.3	Release Date:	12/01/93	POC:	Steve Cornett		
Number Sold:	300	Single User Price:	$400	Phone:	206-524-3575	Fax:	206-524-3575
Report Date:	1/04/93	Report Updated:	6/28/94	E-mail:			
				Address:	5129 24th Ave. NE, Suite 9		
		Site License Available			Seattle, WA 98105-3230		

Description: C-Cover is a test coverage analyzer. It allows the user to locate the control structures in software that haven't been tested, and helps find defects that wouldn't have been found otherwise. It will also determine testing completeness measurements.
Classification: Testing, Quality Assurance, Coverage/Frequency Analyzer
Features: Condition Coverage
Languages Supported: C, C++
Configurations: OS/2, Windows, PC/MS-DOS, UNIX

Tool: C-DOC
Version: 5.1 | Release Date: 11/01/93
Number Sold: 5,000+ | Single User Price: $199-$299(150K-LOC)
Report Date: 3/03/93 | Report Updated: 6/30/94
Evaluation Copy Available | Site License Available

Vendor: Software Blacksmiths, Inc.
POC: Laura Searle
Phone: 905-858-4466 | Fax: 905-858-4466
E-mail:
Address: 6064 Saint Ives Way
Mississauga, ON L5N-4M1 Canada

Description: C-DOC is a set of tools that analyze and document C and C++ programs. It produces clear documentation in text files, and restructures code including insertion of self documentation comment blocks. Requires no source code changes. Handles up to 10K lines.
Classification: Coding, Documentation, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Cross Referencing Tool, Defect/Change Tracker, Redocumenter, Restructurer, Size Measurer, Structure Checker
Features: SlOC Actuals
Languages Supported: C, C++
Configurations: PC/MS-DOS, PC/OS/2

Tool: C-METRIC
Version: 5.1 | Release Date: 1/01/92
Number Sold: 5,000+ | Single User Price: $59
Report Date: 4/07/93 | Report Updated: 6/30/94
Evaluation Copy Available | Site License Available

Vendor: Software Blacksmiths, Inc.
POC: Laura Searle
Phone: 905-858-4466 | Fax: 905-858-4466
E-mail:
Address: 6064 Saint Ives Way
Mississauga, ON L5N-4M1 Canada

Description: C-METRIC analyzes and documents the "cyclomatic" path complexity of C and C++ programs, counts code lines, lines with comments, lines with code, and C statements. Part of the C-DOC tool suite.
Classification: Coding, Documentation, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Size Measurer
Features: SLOC Actuals
Languages Supported: C, C++
Configurations: MS-DOS, PC/OS2

Tool: C-REF
Version: 5.1 | Release Date: 11/01/93
Number Sold: 5,000+ | Single User Price: $59
Report Date: 4/07/93 | Report Updated: 5/24/94
Evaluation Copy Available | Site License Available

Vendor: Software Blacksmiths, Inc.
POC: Laura Searle
Phone: 905-858-4466 | Fax: 905-858-4466
E-mail:
Address: 6064 Saint Ives Way
Mississauga, ON L5N-4M1 Canada

Description: C-REF analyzes C and C++ programs and produces a summary or detailed cross-reference of identifiers used (LOCALS, GLOBALS, PARAMETERS, and DEFINES). Part of the C-DOC tool suite.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Cross Referencing Tool
Features:
Languages Supported: C, C++
Configurations: MS-DOS, PC/OS2

Tool: C-SCAPE
Version: 4.0.1 | Release Date: 1/01/93
Number Sold: – | Single User Price: $499
Report Date: 3/03/93 | Report Updated: 12/03/93
Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: LIANT Software Corp.
POC: April Seaberg
Phone: 508-872-8700 x370 | Fax: 508-626-2221
E-mail:
Address: 959 Concord St.
Framingham, MA 01701

Description: C-SCAPE is an object-oriented interface management system. The C-SCAPE library is a collection of functions for working with windows, data entry screens, graphical images, menus, and text editing.
Classification: System Simulation, Design, Coding, Testing, Reengineering, Software Engineering Environment, Cross Referencing Tool, Debugger, Reverse Engineering
Features:
Languages Supported: C, C++
Configurations: UNIX, Intel (386/486), and Sun SPARC

Tool: C-Vision for C
Version: 3.1 | Release Date: 5/01/93
Number Sold: 1,000 | Single User Price: $139
Report Date: 12/27/93 | Report Updated: 5/16/94
Site License Available

Vendor: Gimpel Software
POC: Anna Gimpel
Phone: 215-584-4261 | Fax: 215-584-4266
E-mail:
Address: 3207 Hogarth Ln.
Collegeville, PA 19426

Description: Generates a cross-reference, hierarchy tree of C source code, also included an outlined listed and a reformatter.
Classification: Coding, Documentation, Reengineering, Cross Referencing Tool, Reformatter, Structure Checker
Features:
Languages Supported: C
Configurations: PC/MS-DOS, PC/OS/2

Tool: C/ANALYST
Version: 2.12 | Release Date:
Number Sold: 1,000 | Single User Price: $250.00
Report Date: 8/24/93 | Report Updated: 5/18/94
Site License Available

Vendor: Cater Software
POC: Tech. Support
Phone: 503-581-5622 | Fax: 503-362-2318
E-mail:
Address: 525 Ferry St., SE, Suite304C
Salem, OR 97301

Description: C/ANALYST generates documentation to help a programmer understand a program. It uses static source code analysis to create a database representing the entire program. From this database a variety of listings can be generated.
Classification: Coding, Documentation, Reengineering, Cross Referencing Tool, Data Reducer & Analyzer, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: PC/MS-DOS

Tool: C3Ada Symbolic Debugger
Version: 2.4 | Release Date: 2/01/91
Number Sold: 25+ | Single User Price: $13,000-$23,000
Report Date: 1/04/93 | Report Updated: 6/30/94
Training Available | Newsletter Available

Vendor: Concurrent Computer Corp.
POC: Linda G. Lewis
Phone: 908-758-7000 | Fax: 908-630-4833
E-mail:
Address: 2 Crescent Pl.
oceanport, NJ 07757

Description: C3Ada Symbolic Debugger enables the user to locate faults by providing places to insert break-points, examining and modifying the values of objects and more. Operates in a CASEmate integration framework environment to provide a single environment for software development.
Classification: Coding, Testing, Configuration Management, Compiler, Cross Referencing Tool, Debugger, Library, Linker, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations: Series 3200-OS/32 R9.1

Tool: CA-COBOLVISION/Analyzer
Version: 1.0 | Release Date: 2/01/93
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 3/02/93 | Report Updated: 6/30/94

Vendor: Computer Associates Intl.
POC: Alan Brown
Phone: 703-709-4740 | Fax: 703-709-4820
E-mail:
Address: 12120 Sunset Hills Rd.
Reston, VA 22090

Description: CA-COBOLVISION/Analyzer lengthens the power of Computer Associates mainframe products in conjunction with COBOL-Intelligent Visualization and Navigation.
Classification: Coding, Reengineering, Cross Referencing Tool, Structure Checker
Features:
Languages Supported: COBOL
Configurations: IBM/MVS, IBM/VSE, PC/MS-DOS

Tool: CA-EZTEST/CICS
Vendor: Computer Associates Intl.

Version: 3.4 | Release Date: 7/01/93 | Number Sold: – | Single User Price: (Contact Vendor) | Report Date: 1/04/93 | Report Updated: 6/30/94 | Training Available

POC: Dana Williams
Phone: 800-225-5224 Fax: –
E-mail:
Address: One Computer Associates Plaza, Islandia, NY 11788

Description: CA-EZTEST/CICS is a debugger for CICS/VS environment. It captures and repairs storage violations and other common abends. It allows actual COBOL, COBOL II, PL/1, and Assembly statement display, conditional and unconditional pauses and instruction stepping.
Classification: Coding, Testing, Debugger, Run-Time Error Checker, Status Displayer
Features: Debugs CICS programs
Languages Supported: Assembler, COBOL, COBOL II, PL/1
Configurations: IBM 370/MVS, IBM 370/VSE

Tool: CA-FPXpert
Vendor: Computer Associates Intl.

Version: 3.0 | Release Date: 1/01/93 | Number Sold: – | Single User Price: (Contact Vendor) | Report Date: 1/04/93 | Report Updated: 6/30/94

POC: Dana Williams
Phone: 800-225-5224 Fax: –
E-mail:
Address: One Computer Associates Plaza, Islandia, NY 11788

Description: CA-FPXpert is a tool that helps IS organization count Function Points. Based upon IFPUG standards, automates the calculation of Function Points and helps to categorize them. Designed for both novice and experienced users.
Classification: Coding, Metrics, Reengineering, Complexity Measurer, Size Measurer
Features: SLOC Actuals
Languages Supported: Assembler, COBOL
Configurations: PC/MS-DOS

Tool: CA-InterTest
Vendor: Computer Associates Intl.

Version: 5.1 | Release Date: 6/30/93 | Number Sold: – | Single User Price: (Contact Vendor) | Report Date: 1/04/93 | Report Updated: 6/30/94 | Training Available | Newsletter Available

POC: Dana Williams
Phone: 800-225-5224 Fax: –
E-mail:
Address: One Computer Associates Plaza, Islandia, NY 11788

Description: CA-InterTest is an ISPF-based debugger that enables batch, PL/1, Assembler, CICS and IMS COBOL programs to be tested. It detects and corrects coding errors, because program abend conditions are intercepted.
Classification: Coding, Testing, Debugger, Run-Time Error Checker, Status Displayer
Features:
Languages Supported: Assembler, CICS, COBOL, COBOL II, PL/1
Configurations: IBM/MVS, IBM/VSE

Tool: CA-METRICS
Vendor: Computer Associates Intl.

Version: 3.0 | Release Date: 8/01/93 | Number Sold: – | Single User Price: (Contact Vendor) | Report Date: 3/02/93 | Report Updated: 7/06/94

POC: Dana Williams
Phone: 800-225-5224 Fax: –
E-mail:
Address: One Computer Associates Plaza, Islandia, NY 11788

Description: CA-Metrics is a powerful, easy-to-use Decision Support System that assists IS systems in measuring and analyzing the quality and productivity of application development and maintenance functions.
Classification: Coding, Project Management, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Defect/Change Tracker, Size Measurer
Features: SLOC Actuals
Languages Supported: COBOL
Configurations: PC/MS-DOS

Tool: CA-OPTIMIZER
Vendor: Computer Associates Intl.

Version: | Release Date: 6/01/93 | POC: Dana Williams
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 800-225-5224 | Fax: –
Report Date: 1/04/93 | Report Updated: 6/30/94 | E-mail:
Training Available | Address: One Computer Associates Plaza, Islandia, NY 11788

Description: CA-OPTIMZER includes optimizer, detector, and analyzer components. Reduces object module size/run-time, identifies unexecutable code, provides enhanced source listings, replaces hex dumps, and tests verified programs and identifies inefficient source code.
Classification: Design, Coding, Testing, Quality Assurance, Reengineering, Coverage/Frequency Analyzer, Data Reducer & Analyzer, Defect/Change Tracker, Optimizer, Performance/Timing Analyzer, Run-Time Error Checker, Status Displayer, Structure Checker, Syntax & Semantics Analyzer
Features: Condensed compiler cross-reference
Languages Supported: COBOL
Configurations: IBM/MVS, IBM/VM, IBM/VSE

Tool: CA-PAN/LCM
Vendor: Computer Associates Intl.

Version: – | Release Date: | POC: Dana Williams
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 800-225-5224 | Fax: –
Report Date: 6/30/93 | Report Updated: 12/14/93 | E-mail:
Training Available | Address: One Computer Associates Plaza, Islandia, NY 11788

Description: CA-PAN/LCM is a system of tools for change and configuration management for PC-DOS, MS-DOS, OS/2, Presentation Manager (PM), and LAN environments.
Classification: Coding, Requirements Analysis, Project Management, Configuration Management, Quality Assurance, Reengineering, Auditor, Comparator, Downloader, Recompiler
Features: Revision branching and merging
Languages Supported: All
Configurations: AIX, HP-UX, MS-DOS, OS/2, SCO/UNIX, Sun/Sun OS

Tool: CA-Realia II Workbench
Vendor: Computer Associates Intl.

Version: | Release Date: | POC: Dana Williams
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 800-225-5224 | Fax: –
Report Date: 12/29/93 | Report Updated: 12/29/93 | E-mail:
Training Available | Address: One Computer Associates Plaza, Islandia, NY 11788

Description: Facilitates the offloading of mainframe development and downsizing to the PC.
Classification: Testing, Documentation, Configuration Management, Compiler, Coverage/Frequency Analyzer, Status Displayer
Features:
Languages Supported: COBOL, COBOL II
Configurations: PC/Windows

Tool: CA-TRAPS
Vendor: Computer Associates Intl.

Version: – | Release Date: | POC: Dana Williams
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 800-225-5224 | Fax: –
Report Date: 1/04/93 | Report Updated: 6/30/94 | E-mail:
Address: One Computer Associates Plaza, Islandia, NY 11788

Description: CA-TRAPS is a capture-replay tool that is menu driven and allows recording, editing, and replay of test scripts. CA-TRAPS is able to test PCs, minis, and mainframes through a synchronous connection.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Reliability Analyzer, Test Execution Manager, Test Instrumenter
Features: Text-based Testing
Languages Supported: All
Configurations: 3270, 5250 and MS-DOS

Tool: CA-VERIFY
Version: 4.2 | Release Date: 9/01/93
Number Sold: -- | Single User Price: (Contact Vendor)
Report Date: 1/04/93 | Report Updated: 6/30/94
Training Available

Vendor: Computer Associates Intl.
POC: Dana Williams
Phone: 800-225-5224 | Fax: --
E-mail:
Address: One Computer Associates Plaza
Islandia, NY 11788

Description: CA-VERIFY logs CICS production or test data from terminals and then runs and compares output. It can be used for quality assurance, regression testing, or application stress testing. Functions include browsing, editing, copying, printing, or deleting.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Comparator, Network Simulator, Session Documenter, Test Execution Manager
Features: Single or Multiple terminal logging
Languages Supported: All
Configurations: IBM/MVS, IBM/VSE

Tool: CANTATA
Version: 3.0 | Release Date: 1/01/94
Number Sold: 30 | Single User Price: $12,000
Report Date: 1/04/93 | Report Updated: 6/30/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: IPL Information Processing Ltd.
POC: Ian Gilchrist
Phone: 04-225-444-888 | Fax: 04-225-444-400
E-mail:
Address: Eveleigh House, Grove St.
Bath, BA1 5LR England, UK

Description: CANTATA is an integrated VVSET toolset for unit and integration testing of C and C++ software. It supports the construction of all types of dynamic test (white and black box), test coverage analysis and static analysis.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Auditor, Complexity Measurer, Coverage/Frequency Analyzer, Cross Assembler, Size Measurer, Structure Checker, Syntax & Semantics Analyzer, Test Execution Manager
Features: SLOC Actuals
Languages Supported: Ada, C, C++
Configurations: OS/2, UNIX, VMS, PC/MS-DOS

Tool: CarbonCopy
Version: -- | Release Date:
Number Sold: -- | Single User Price: (Contact Vendor)
Report Date: 1/04/93 | Report Updated: 6/30/94

Vendor: Clyde Digital Systems, Inc.
POC: Technical Support
Phone: 801-224-5306 | Fax: 801-225-9057
E-mail:
Address: 371 E. 800 S.
Orem, UT 84058

Description: CarbonCopy is a terminal I/O capture utility that the user can just turn on and off whenever desired.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool
Features:
Languages Supported: --
Configurations:

Tool: CARDtools (CARDtools)
Version: 4.03 | Release Date: 10/01/93
Number Sold: 400 | Single User Price: (Contact Vendor)
Report Date: 8/16/93 | Report Updated: 6/30/94
Training Available
Evaluation Copy Available | Site License Available

Vendor: CARDtools Systems
POC: Tech. Support
Phone: 503-581-5622 | Fax: 503-362-2318
E-mail:
Address: 525 Ferry St., SE, Suite304C
Salem, OR 97301

Description: CARDtools is an integrated set of tools designed for complex real-time, embedded system development.
Classification: Design, Coding, Requirements Analysis, Testing, Documentation, Reengineering, Software Engineering Environment, Debugger, Structure Checker
Features: 2167A Documentation
Languages Supported: All
Configurations: Sun/Sun OS, VAX/VMS

Tool: CaseQMS
Vendor: Analysis & Computer Systems, Inc.

Version: –
Release Date:
Number Sold: –
Single User Price: (Contact Vendor)
Report Date: 2/26/93
Report Updated: 6/30/94

POC: Technical Support
Phone: 617-272-8841 Fax: –
E-mail:
Address: One Van De Graaff Dr.
Burlington, MA 01803

Description: CaseQMS may be used for tracking, analyzing, and managing software problems and issues.
Classification: Testing, Quality Assurance, Defect/Change Tracker
Features:
Languages Supported: ORACLE, SQL, Sybase
Configurations: SQL, Window 3.0

Tool: CCount
Vendor: SAIC-Dayton

Version:
Release Date:
Number Sold: –
Single User Price: (Contact Vendor)
Report Date: 3/31/94
Report Updated: 6/30/94

POC: Debbie Dyer
Phone: 619-535-7652 Fax: 619-546-6833
E-mail:
Address: 10260 Campus Point Dr., M/S 12
San Diego, CA 92121

Description: C line counter, available as C source code and logical line count.
Classification: Testing, Quality Assurance, Metrics, Complexity Measurer, Size Measurer
Features: SLOC Actuals
Languages Supported: C
Configurations: Mac, PC/MS-DOS, UNIX

Tool: cflow
Vendor: Digital Equipment Corp.

Version: 1.38
Release Date: 10/01/93
Number Sold: –
Single User Price: (Contact Vendor)
Report Date: 1/04/93
Report Updated: 12/29/93

POC: Tech. Support
Phone: 503-581-5622 Fax: 503-362-2318
E-mail:
Address: 525 Ferry St., SE, Suite304C
Salem, OR 97301

Description: cflow is a coverage/frequency analyzer.
Classification: Testing, Quality Assurance, Coverage/Frequency Analyzer
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: Change Man
Vendor: Optima Software, Inc.

Version: 3.3.2
Release Date: 3/01/92
Number Sold: 100+
Single User Price: $40,000 - $75,000
Report Date: 1/26/93
Report Updated: 6/02/94
Newsletter Available
Evaluation Copy Available
Site License Available

POC: Technical Support
Phone: 916-646-3800 Fax: 916-646-3466
E-mail:
Address: 1765 Challenge Way, Suite 109
Sacramento, CA 95815

Description: Change Man automates the software change implementation lifecycle. It provides protection for the production environment; it has source-to-load synchronization, on-line approvals, backout management, and automated turnover.
Classification: Testing, Configuration Management, Quality Assurance, Software Engineering Environment, Comparator
Features:
Languages Supported: BAL, COBOL, PL/1
Configurations: IBM/MVS, PC/MS-DOS, PC/OS/2

Tool: CheckIt LAN
Version: 2.1 Release Date: 3/01/92
Number Sold: 1,000+ Single User Price: (Contact Vendor)
Report Date: 3/01/93 Report Updated: 6/30/94
Training Available
Evaluation Copy Available Site License Available

Vendor: TouchStone Software Corp.
POC: Technical Support
Phone: 800-531-0450 Fax: 714-960-1886
E-mail:
Address: 2130 Main ST. Suite 250
Huntington Beach, CA 92648

Description: CheckIt LAN lets you troubleshoot problems on a Novell LAN from your PC. It allows the user to perform a software inventory, scan every PC for viruses, and monitor the network for problems and usage.
Classification: Testing, Data Extractor, Data Reducer & Analyzer, Network Analyzer, Run-Time Error Checker
Features:
Languages Supported: --
Configurations: PC

Tool: CheckIt PRO:Analyst
Version: 1.0 Release Date: 11/01/93
Number Sold: 900 Single User Price: $149
Report Date: 11/30/93 Report Updated: 6/30/94

Vendor: TouchStone Software Corp.
POC: Scott Mackay
Phone: 800-531-0450 Fax: 714-960-1886
E-mail: 70762,2663(cserve)
Address: 2130 Main ST. Suite 250
Huntington Beach, CA 92648

Description: CheckIt PRO:Analyst analyzes system performances, reviews software installation requirements, and avoids system set-up conflicts when installing hardware. Also assists with hardware and software purchase decisions, installing upgrades, or determining if repairs are required.
Classification: Requirements Analysis, Testing, Configuration Management, Quality Assurance, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: OS/2, Windows, PC/MS-DOS

Tool: Checkpoint
Version: 2.1 Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 2/17/93 Report Updated: 5/24/94

Vendor: Software Productivity Research, Inc.
POC: Lynne Caramanica
Phone: 617-273-0140 Fax: 617-273-5176
E-mail:
Address: 1 New England Executive Park
Burlington, MA 01803-5005

Description: Checkpoint is an applied software measurement tool that enables a precise estimate, measurement, and assessment of software project variables. Uses SPR's methodology to measure all the factors that influence the development of software.
Classification: Quality Assurance, Metrics, Size Measurer
Features: SLOC Actuals
Languages Supported: All
Configurations: PC, UNIX

Tool: CLAS 2000
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 1/04/93 Report Updated: 6/30/94

Vendor: Biomation
POC: Gregory A. Richardson
Phone: 800-835-5996 Fax: --
E-mail:
Address: 3875 Thundercloud Dr
Colorado Springs, CO 80920

Description: CLAS 2000 is a logic analysis system that performs a number of tests on hardware, including timing speed, memory, and glitch counting.
Classification: Testing, Performance/Timing Analyzer, Run-Time Error Checker
Features:
Languages Supported: --
Configurations: HP/HP-UX, PC/Window 3.0, RISC 6000

Tool: CLEAR Plus
Version: 2.1 Release Date: 9/01/89
Number Sold: -- Single User Price: $200
Report Date: 1/05/93 Report Updated: 6/30/94
Evaluation Copy Available

Vendor: CLEAR Software, Inc.
POC: Colleen Terry
Phone: 617-965-6755 Fax: 617-965-5310
E-mail:
Address: 385 Elliot St.
Newton, MA 02164

Description: CLEAR Plus checks C code or dBASE for logic. It also flowcharts procedures, and tree charts code.
Classification: Documentation, Project Management, Reengineering, Reuse, Data Reengineering, Reverse Engineering, Structure Checker
Features:
Languages Supported: C, DB2
Configurations: IBM XT, AT, and compatibles; MS-DOS 3.0

Tool: CMS-2 Design Analyzer (DESAN)
Version: 6 Release Date: 10/28/93
Number Sold: 6 Single User Price: $25,000
Report Date: 3/02/93 Report Updated: 6/02/94
Training Available
Evaluation Copy Available

Vendor: NCCOSC
POC: Bryan Riegle
Phone: 619-553-9446 Fax: 619-553-9483
E-mail: riegle@maple.nosc.mil
Address: NRaD, Code 884/RIEGLE
San Diego, CA 92152

Description: CMS-2 DESAN analyzes CMS-2 source code in preparation for Reengineering, provide references, include elements and other reports showing interdependencies.
Classification: Design, Coding, Documentation, Project Management, Reengineering, Reuse, Software Engineering Environment, Reverse Engineering, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada; CMS-2
Configurations: PC/MS-DOS, Sun/UNIX, VAX/VMS

Tool: CMS-2 Standards Checker (STDCK)
Version: 6 Release Date: 10/28/93
Number Sold: 6 Single User Price: $25K
Report Date: 3/02/93 Report Updated: 6/02/94
Training Available
Evaluation Copy Available

Vendor: NCCOSC
POC: Bryan Riegle
Phone: 619-553-9446 Fax: 619-553-9483
E-mail: riegle@maple.nosc.mil
Address: NRaD, Code 884/RIEGLE
San Diego, CA 92152

Description: The CMS-2 Standards Checker will check and mark standards violations in CMS-2 source code per project engineering handbook standards.
Classification: Coding, Documentation, Project Management, Reengineering, Auditor
Features:
Languages Supported: Ada, CMS-2
Configurations: PC/MS-DOS, Sun/UNIX, VAX/VMS

Tool: CMS-2 Test Coverage Analyzer (TCA)
Version: 5.1 Release Date: 6/30/93
Number Sold: 3 Single User Price: $25,000
Report Date: 3/02/93 Report Updated: 6/30/94
Training Available
Evaluation Copy Available

Vendor: NCCOSC
POC: Bryan Riegle
Phone: 619-553-9446 Fax: 619-553-9483
E-mail: riegle@maple.nosc.mil
Address: NRaD, Code 884/RIEGLE
San Diego, CA 92152

Description: Instruments CMS-2 source code and after execution of code via PC-debug or a simulator, shows test session or scenario coverage. It also verifies completeness of testing for code written in the CMS-2 language.
Classification: Design, Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer
Features:
Languages Supported: Ada, CMS-2
Configurations: PC/MS-DOS, VAX/VMS

Tool: COBOL Analyst
Version: 2.0 Release Date: 12/15/93
Number Sold: 1,000 Single User Price: $2,500
Report Date: 2/17/93 Report Updated: 6/30/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Software Eng. & Enhancement Center, Inc.
POC: Adam D. Young
Phone: 714-337-3928 Fax: --
E-mail:
Address: 970 Crest Estates Dr., P.O. Box 152
Crest Park, CA 92326

Description: COBOL Analyst/CICS is a static analysis tool for analyzing mainframe COBOL CICS applications on a PC. It runs under MS Windows or OS/2 2.0. It provides diagrams automatically for system level program control flow, program structure charts, DBD hierarchy.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Auditor, Complexity Measurer, Cross Referencing Tool, Data Name Rationalizer, Redocumenter, Reverse Engineering, Size Measurer, Structure Checker, Syntax & Semantics Analyzer
Features: Exports design-level objects, SLOC Actuals
Languages Supported: CICS, COBOL, DB2, IMS
Configurations: PC/OS/2, PC/Windows

Tool: COBOL Glossary
Version: 4.0 Release Date: 7/01/93
Number Sold: 700 Single User Price: $695 site license
Report Date: 1/26/93 Report Updated: 6/30/94
Evaluation Copy Available Site License Available

Vendor: MacKinney Systems
POC: Tech Support
Phone: 714-337-3928 Fax: --
E-mail:
Address: 970 Crest Estates Dr., P.O. Box 152
Crest Park, CA 92326

Description: COBOL Glossary reads COBOL libraries and produces cross references for data elements, files, copy books, called subprograms, reserved words, etc. Produces similar reports for CICS commands. Useful for maintenance, conversions, and documentation.
Classification: Coding, Requirements Analysis, Documentation, Quality Assurance, Reengineering, Software Engineering Environment, Cross Referencing Tool
Features:
Languages Supported: COBOL
Configurations: VMS, VSE

Tool: COBOL Magic
Version: 1.3 Release Date: 12/01/93
Number Sold: 20 Single User Price: $175-$275
Report Date: 1/26/93 Report Updated: 6/30/94
Evaluation Copy Available Site License Available

Vendor: Jacobson Software, Inc.
POC: Richard Jacobson
Phone: 612-550-1609 Fax: --
E-mail:
Address: 4221 Hemlock Lane
Plymouth, MN 55441

Description: COBOL Magic analyzes COBOL source code. Data definitions and paragraphs can be located without typing. An automatic stack of return locations prevents you from getting lost while following complex logic.
Classification: Coding, Reengineering, Reuse, Cross Referencing Tool, Reverse Engineering, Structure Checker
Features:
Languages Supported: COBOL, COBOL II, CORAL 86
Configurations: PC/MS-DOS

Tool: COBOL STANDARDS ANALYZER
Version: 1.2 Release Date: 11/01/90
Number Sold: 1 Single User Price: (Contact Vendor)
Report Date: 5/19/93 Report Updated: 6/30/94
Training Available
Evaluation Copy Available Site License Available

Vendor: M.D. Friedman Associates, Inc.
POC: K. L. Lightfoot
Phone: 214-644-1379 Fax: --
E-mail:
Address: 9241 LBJ Freeway, Suite 100
Dallas, TX 75243

Description: CSA is a program source code analyzer/auditor: checks compliance to user defined coding standards. Evaluates program structure, language, commentary and labeling, data usage, and identifies unreferenced data and code. User parameters perform standards definition.
Classification: Coding, Reengineering, Auditor, Commenter, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: PC/DOS - 2.OMEG RAM; 20-100 MB DISK. IBM-MVS-4.OMEG REGION; 20-100 MB DISK

Tool: COBOL-lint
Vendor: Information Processing Techniques Corp.

Version:	1.18	Release Date:	10/01/91	POC:	Ron Charters		
Number Sold:	10+	Single User Price:	$3,900	Phone:	415-494-2758	Fax:	415-494-2758
Report Date:	3/03/93	Report Updated:		E-mail:			
Training Available				Address:	2 Brookside Lane		
Evaluation Copy Available		Site License Available			Mansfield Center, CT 06250		

Description: COBOL-Lint analyzes and documents COBOL source programs at all stages of development. It is more comprehensive than standard compilers. It analyzes source files both individually and as a group.
Classification: Coding, Documentation, Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: RISC 6000, Sun/Sun OS, VAX/VMS

Tool: COBOL/METRICS
Vendor: Computer Data Systems, Inc.

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	301-921-7003	Fax:	301-948-9328
Report Date:	1/27/93	Report Updated:	7/06/94	E-mail:			
				Address:	One Curie Ct.		
					Rockville, MD 20850-4389		

Description: COBOL Metrics aids DP managers and quality assurance and maintenance specialists by assessing the complexity and structure of their systems as well as determining the difficulty of maintaining individual programs within their systems.
Classification: Coding, Quality Assurance, Metrics, Reengineering, Code Change Monitor, Complexity Measurer, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: COBOL
Configurations: IBM, PC

Tool: Code Auditor
Vendor: Proprietary Software Systems, Inc.

Version:	–	Release Date:		POC:	Richard Gilinsky		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	310-394-5233	Fax:	310-393-3122
Report Date:	1/04/93	Report Updated:	6/30/94	E-mail:			
				Address:	429 Santa Monica Blvd., Suite 430		
					Santa Monica, CA 90401		

Description: Code Auditor is a JOVIAL tool auditor. This product was developed for the USAF; it belongs to the government.
Classification: Coding, Quality Assurance, Reengineering, Auditor
Features:
Languages Supported: JOVIAL
Configurations: DEC, IBM

Tool: CodeBreaker
Vendor: McCabe & Assoc., Inc.

Version:	4.01	Release Date:	8/31/93	POC:	Tim McCabe		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-634-0150	Fax:	410-995-1528
Report Date:	1/26/93	Report Updated:	6/30/94	E-mail:			
Training Available		Newsletter Available		Address:	5501 Twin Knolls Rd., Suite 111		
Evaluation Copy Available		Site License Available			Columbia, MD 21045		

Description: CodeBreaker, a reverse engineering tool that identifies redundant and reusable code. It can be used to compare the designs of two modules as well as the designs of two programs. It verifies both the decision structure and the calling structure.
Classification: Design, Coding, Testing, Reengineering, Restructurer, Reusable Components Identifier, Reverse Engineering, Structure Checker
Features:
Languages Supported: All
Configurations: UNIX, Apollo, DEC, DEC/ULTRIX, HP, IBM/AIX, PC/MS-DOS, SGraphics, VAX/VMS

Tool: CodeCenter

Version:	--	Release Date:			
Number Sold:	--	Single User Price:	(Contact Vendor)		
Report Date:	1/27/93	Report Updated:	6/30/94		

Vendor: CenterLine Software, Inc.

POC:	Dick Burgett		
Phone:	703-749-1100	Fax:	703-749-1108
E-mail:	burgett@centerline.com		
Address:	7926 Jones Branch Dr., Suite 1000 McLean, VA 22102		

Description: CodeCenter is an integrated C programming environment that combines an interactive interpreter, a source-level debugger, graphic browsers, and an incremental linker-loader.
Classification: Coding, Testing, Compiler, Cross Referencing Tool, Debugger, Interpreter, Linker
Features:
Languages Supported: C
Configurations: DEC, HP, IBM, Sun, UNIX

Tool: CodeCheck

Version:	5.0	Release Date:	1/01/88		
Number Sold:	600	Single User Price:	$495		
Report Date:	3/09/93	Report Updated:	6/30/94		
Evaluation Copy Available		Site License Available			

Vendor: ABRAXAS Software, Inc.

POC:	Elizabeth Layton		
Phone:	503-244-5253	Fax:	503-244-8375
E-mail:			
Address:	5530 S.W. Kelly Portland, OR 97201		

Description: CodeCheck analyzes C and C++ source code. CodeCheck is designed to enhance the effectiveness and efficiency of project management by analyzing the portability, maintainability, and style of the source code.
Classification: Coding, Project Management, Quality Assurance, Reengineering, Auditor, Code Change Monitor, Complexity Measurer, Reverse Engineering, Size Measurer, Syntax & Semantics Analyzer
Features: SLOC Actuals
Languages Supported: C, C++
Configurations: MS-DOS, OS2, UNIX, Mac/Mac OS, PC/DR-DOS, VAX/VMS

Tool: COHESION Team/SEE

Version:	1.0	Release Date:	1/01/94		
Number Sold:		Single User Price:	(Contact Vendor)		
Report Date:	1/27/93	Report Updated:	6/30/94		

Vendor: Digital Equipment Corp.

POC:	Technical Support		
Phone:	800-344-4825	Fax:	603-881-2381
E-mail:			
Address:	146 Mairr St. Maynard, MA 01754-2571		

Description: COHESION Team/SEE for OSF/1 AXP is a set of software tools for managing data and development processes for medium-to-large-scale UNIX software engineering projects distributed across multivendor, multisite environments. It provides the base environment to support the full software development lifecycle.
Classification: Coding, Testing, Configuration Management, Quality Assurance, Metrics, Database, Software Engineering Environment, Data Extractor, Debugger, Defect/Change Tracker
Features:
Languages Supported: Ada, C++
Configurations: DECstation/OSF/1

Tool: COMPARE

Version:	--	Release Date:			
Number Sold:	--	Single User Price:	(Contact Vendor)		
Report Date:	1/04/93	Report Updated:			

Vendor: Aldon Computer Group

POC:	Technical Support		
Phone:	510-839-3535	Fax:	510-839-2894
E-mail:			
Address:	401 15th St. Oakland, CA 94612		

Description: COMPARE compares files to determine differences.
Classification: Testing, Comparator
Features:
Languages Supported: All
Configurations: HP-3000/MPE

Tool: COMPAREX
Vendor: Sterling Software, Inc.

Version:	7.2.3	Release Date:	5/01/93	POC:	Shelia Edwards		
Number Sold:	1,300+	Single User Price:	(Contact Vendor)	Phone:	818-716-1616	Fax:	818-716-5998
Report Date:	1/04/93	Report Updated:	12/29/93	E-mail:			
Training Available		Newsletter Available		Address:	5900 Canoga Ave., PO Box 4237		
Evaluation Copy Available					Woodland Hills, CA 91367		

Description: COMPAREX is a data/text comparison utility used for testing, conversions, third party reconciliation, auditing and change control.
Classification: Coding, Testing, Configuration Management, Quality Assurance, Reengineering, Database, Auditor, Comparator
Features:
Languages Supported: COBOL
Configurations: IBM/MVS/ESA, IBM/MVS/XA, IBM/VM/CMS, IBM/VSE

Tool: Complexity Measures Tool (CMT)
Vendor: EVB Software Engineering, Inc.

Version:		Release Date:		POC:	Jennifer Jaynes Lott		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	301-695-6960	Fax:	301-695-7734
Report Date:	12/01/93	Report Updated:	7/07/94	E-mail:	jenny@evb.com		
				Address:	5303 Spectrum Dr., Suite G		
					Frederick, MD 21701		

Description: The CMT produces a variety of metrics designed to analyze the complexity of an Ada program.
Classification: Coding, Reengineering, Complexity Measurer, Size Measurer
Features: SLOC Actuals
Languages Supported: Ada
Configurations: UNIX, DEC/VMS

Tool: Computer Tester Analyzer Controller (C-TAC)
Vendor: ITCN

Version:	4.2	Release Date:	3/01/93	POC:	John Kroeker		
Number Sold:	5+	Single User Price:	(Contact Vendor)	Phone:	800-439-2648	Fax:	513-439-9173
Report Date:	1/04/93	Report Updated:	6/30/94	E-mail:			
Training Available				Address:	8571 Gander Creek Dr.		
					Maimisburg, OH 45342		

Description: C-TAC provides a unique perspective for real-time nonintrusive (RTNI) monitoring of embedded code in its target run time environment. RTNI monitoring capability compliments the intrusive console debug functions currently available by most compiler vendor.
Classification: Coding, Testing, Quality Assurance, Reengineering, Coverage/Frequency Analyzer, Data Reducer & Analyzer, Debugger, Disassembler, Downloader, Network Analyzer, Reliability Analyzer, Retargeting, Reverse Engineering, Test Instrumenter
Features: Actual Real-Time code execution
Languages Supported: Ada, CMS-2, JOVIAL
Configurations: PC/MS-DOS, PC/Windows

Tool: Compuware Solution Set
Vendor: Compuware Corp.

Version:	--	Release Date:		POC:	Lynn M. Allman		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	313-737-7300	Fax:	313-737-7108
Report Date:	1/04/93	Report Updated:	6/30/94	E-mail:			
				Address:	31440 Northwestern Hwy.		
					Farmington Hills, MI 48334-2564		

Description: Compuware Solution Set is a family of automated tools that addresses each aspect of Computer Assisted Testing and Implementation (CATI).
Classification: Coding, Testing, Quality Assurance, Software Engineering Environment, Capture-Replay Tool, Debugger, Simulator, Test Execution Manager
Features:
Languages Supported: CICS, COBOL
Configurations:

Tool: CONFIGURE
Version: Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/27/93 Report Updated:

Vendor: **Computer Data Systems, Inc.**
POC: Technical Support
Phone: 301-921-7003 Fax: 301-948-9328
E-mail:
Address: One Curie Ct.
Rockville, MD 20850-4389

Description: CONFIGURE helps DP managers establish, implement, and enforce standards relating to the physical appearance of COBOL source code.
Classification: Coding, Quality Assurance, Reengineering, Auditor, Reformatter
Features:
Languages Supported: COBOL
Configurations:

Tool: CONVERSION ENGINE
Version: 2.3.2 Release Date: 4/01/92
Number Sold: 7 Single User Price: $60,000-$90,000
Report Date: 1/27/93 Report Updated: 6/30/94
Training Available
Evaluation Copy Available Site License Available

Vendor: **M.D. Friedman Associates, Inc.**
POC: K. L. Lightfoot
Phone: 214-644-1379 Fax: –
E-mail:
Address: 9241 LBJ Freeway, Suite 100
Dallas, TX 75243

Description: CONVERSION ENGINE is a generalized programmable language processor used for diverse software analysis, migration, reverse engineering and Reengineering activities. Will translate from Cobol and Pascal to Cobol II, Ada, and others.
Classification: Coding, Reengineering, Retargeting, Reverse Engineering, Source Code Translator, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: ALC, Basic, BMS, COBOL, COBOL II, DATACOM, MFS, Pascal, SQL
Configurations: IBM/AIX, PC/MS-DOS

Tool: CPR
Version: 2.0 Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: Report Updated: 5/19/94
Evaluation Copy Available Site License Available

Vendor: **Cole Software, Inc.**
POC: Jim Rahm
Phone: 404-760-7306 Fax: 703-242-1470
E-mail:
Address: 992 E. Freeway Dr., Suite A
Conyers, GA 30207

Description: CPR simulates CICS and provides programmers with tools to complete testing and debugging of CICS command-level applications.
Classification: System Simulation, Coding, Testing, Quality Assurance, Reengineering, Assembler, Capture-Replay Tool, Compiler, Data Reducer & Analyzer, Debugger, Emulator, Environmental Simulator, Functional Simulator, Linker, Reliability Analyzer, Simulator, Structure Checker, Test Data Generator, Test Execution Manager
Features:
Languages Supported: Assembler, COBOL II
Configurations: IBM/MVS

Tool: Cross System Product (CSP)
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 10/15/93 Report Updated: 6/30/94

Vendor: **Intl. Business Machines Corp.**
POC: Brad Timothy
Phone: 801-328-6763 Fax: 801-328-6692
E-mail:
Address: 420 E. So. Temple
Salt Lake City, UT 84111-1391

Description: The IBM CSP set is a family of AD/Cycle products that allow you to develop, generate, and execute applications for many different IBM operating system environments.
Classification: Design, Testing, Cross Compiler, Network Analyzer, Test Data Generator, Test Execution Manager
Features:
Languages Supported: COBOL, DB2, SQL
Configurations: IBM/OS/2

Tool: Crossbow
Vendor: Onset Computer Corp.

Version:	1.99K	Release Date:	9/01/92	POC:	John Godley		
Number Sold:	--	Single User Price:	$295	Phone:	508-563-9000	Fax:	508-563-9477
Report Date:	3/03/93	Report Updated:	6/30/94	E-mail:			
		Newsletter Available		Address:	PO Box 3450		
Evaluation Copy Available					Pocasset, MA 02559-4350		

Description: Crossbow is an assembler, text editor, communications tool (terminal emulator), and provides an on-line reference/help capability.
Classification: Coding, Reengineering, X Communications, Assembler, Cross Assembler, Cross Referencing Tool, Emulator, Text Editor
Features:
Languages Supported: Assembler
Configurations: Mac/Mac OS

Tool: CRYSTAL
Vendor: BGS Systems

Version:	--	Release Date:		POC:	Arthur Riseman		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	617-891-0000	Fax:	617-890-0000
Report Date:	7/28/93	Report Updated:	6/30/94	E-mail:			
				Address:	128 Technology Ctr.		
					Waltham, MA 02254-9111		

Description: The CRYSTAL product predicts DB2 performance and capacity requirements for those application in the early stages of prototyping through those that have matured into production.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: CICS, FORTRAN
Configurations: MVS/XA, MVS/ESA, PC AT

Tool: ctrace
Vendor: Digital Equipment Corp.

Version:	--	Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-344-4825	Fax:	603-881-2381
Report Date:	1/05/93	Report Updated:	5/16/94	E-mail:			
				Address:	146 Mairr St.		
					Maynard, MA 01754-2571		

Description: ctrace is a static code analyzer that provides system service call information.
Classification: Coding, Reengineering, Structure Checker
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: CustomQA
Vendor: Analysis & Computer Systems, Inc.

Version:	--	Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	617-272-8841	Fax:	--
Report Date:	1/05/93	Report Updated:	6/30/94	E-mail:			
				Address:	One Van De Graaff Dr.		
					Burlington, MA 01803		

Description: CustomQA is a test management tool used for the tracking, reporting and analysis of software defects, enhancements, etc. in an on-line environment, both stand alone and networked.
Classification: Testing, Defect/Change Tracker, Test Execution Manager
Features:
Languages Supported: --
Configurations:

Tool: cxref
Vendor: Digital Equipment Corp.

Version:	1.38	Release Date:	10/01/93	POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-344-4825	Fax:	603-881-2381
Report Date:	1/05/93	Report Updated:	12/29/93	E-mail:			
				Address:	146 Mairr St. Maynard, MA 01754-2571		

Description: cxref is a source code static analyzer that provides C cross reference information.
Classification: Coding, Reengineering, Cross Referencing Tool
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: DAISys
Vendor: S-CUBED, Inc.

Version:	1.4	Release Date:	7/01/93	POC:	John A. Rade		
Number Sold:	27 sites	Single User Price:	$18000	Phone:	203-323-0760	Fax:	203-323-2007
Report Date:	1/05/93	Report Updated:	6/30/94	E-mail:			
Training Available		Newsletter Available		Address:	1010 Washington Blvd.		
		Site License Available			Stamford, CT 06901		

Description: DAISys is PC-based, application development tool that assists developers during the full development cycle. It uses an expert system and object-oriented techniques that transforms business requirements in ordinary business terms to logical designs.
Classification: System Simulation, Requirements Trace, Design, Coding, Requirements Analysis, Testing, Documentation, Project Management, Configuration Management, Quality Assurance, Reengineering, Reuse, Database, Software Engineering Environment, X Communications, Case-Based Reasoning, Code Generator, Commenter, Cross Referencing Tool, Data Reengineering, Forward Engineering, Frame-Based Shell, Reusable Components Identifier
Features:
Languages Supported: CICS, COBOL, DB2, VSAM
Configurations: PC/MS-DOS, PC/OS/2, PC/Window 3.0

Tool: DataBasic II
Vendor: Consumer Systems Corp.

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	312-495-8822	Fax:	–
Report Date:	1/05/93	Report Updated:	5/16/94	E-mail:			
				Address:	2 E 22nd St. Lombard, IL 60148		

Description: DataBasic II is an IMS/DL1 database manipulation utility system.
Classification: Database, Comparator
Features:
Languages Supported:
Configurations:

Tool: DATATEC
Vendor: Compuware Corp.

Version:	–	Release Date:		POC:	Lynn M. Allman		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	313-737-7300	Fax:	313-737-7108
Report Date:	1/05/93	Report Updated:	5/10/94	E-mail:			
				Address:	31440 Northwestern Hwy. Farmington Hills, MI 48334-2564		

Description: DATATEC analyze COBOL systems and identify undocumented, redundant, and inconsistent data definitions. It lets the creation of standardized definitions with meaningful, descriptive data names.
Classification: Coding, Testing, Reengineering, Data Name Rationalizer, Forward Engineering, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL, COBOL II
Configurations: IBM, MVS/ESA, MVS/SPARC, MVS/XA

Tool: DATATEC-DS
Vendor: XA Systems Corp.

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-344-9223	Fax:	408-395-1800
Report Date:	1/05/93	Report Updated:	6/30/94	E-mail:			
				Address:	983 University Ave. Los Gatos, CA 95030		

Description: The DATATEC-DS is designed to analyze and standardize inconsistent data definitions through a methodology and automated tools. It provides tracing capabilities, impact analysis, formatting and re-formatting capabilities, and more.
Classification: Coding, Reengineering, Cross Referencing Tool, Reformatter
Features:
Languages Supported: FORTRAN
Configurations: IBM/MVS

Tool: DATRIX
Vendor: Bell Canada, Corp. Quality Assurance

Version:	1.7	Release Date:		POC:	Francois Coallier		
Number Sold:	25+	Single User Price:	$7,500	Phone:	514-468-5523	Fax:	514-448-2080
Report Date:	1/26/93	Report Updated:	6/30/94	E-mail:			
				Address:	Room 226, 2265 Roland Therrien Blvd. Longueuil, PQ J4N-1C5 Canada		

Evaluation Copy Available

Description: DATRIX can be used for software audits and to assist in the performance of code verification and validation task of ANSI/IEEE Std. 1012.
Classification: Design, Coding, Quality Assurance, Reengineering, Auditor, Complexity Measurer, Cross Referencing Tool, Size Measurer
Features: SLOC Actuals
Languages Supported: C, COBOL, FORTRAN, Pascal
Configurations: HP/HP-UX, MS-DOS, Sun/SunOS

Tool: DCD III
Vendor: Marble Computer, Inc.

Version:	1.5	Release Date:	7/01/93	POC:	Gail Y. O'Leary		
Number Sold:	500+	Single User Price:	(Contact Vendor)	Phone:	800-252-1400	Fax:	304-267-3046
Report Date:	2/01/93	Report Updated:	6/30/94	E-mail:			
				Address:	205 E. King St., PO Box 2088 Martinsburg, WV 25401		

Training Available
Evaluation Copy Available Site License Available

Description: This is a COBOL maintenance tool that provides documentation for analysis of COBOL programs and systems, and source-level analysis.
Classification: Coding, Documentation, Reengineering, Reuse, Coverage/Frequency Analyzer, Cross Referencing Tool, Data Extractor, Data Name Rationalizer, Data Reengineering, Redocumenter, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: OS/VS1, MVS, MVS/XA, MVS/ESA, PC/MS-DOS, Unisys1100 /2200/OS-1100

Tool: DEC FUSE
Vendor: Digital Equipment Corp.

Version:	1.2	Release Date:	2/01/93	POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-344-4825	Fax:	603-881-2381
Report Date:	1/27/93	Report Updated:	5/16/94	E-mail:			
				Address:	146 Mairr St. Maynard, MA 01754-2571		

Description: The DEC FUSE provides code analysis, forward/reverse engineering, redocumentation, and restructuring of several languages. It also provides calling trees and cross reference diagrams.
Classification: Coding, Reengineering, Cross Referencing Tool, Redocumenter, Restructurer, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada, C, COBOL, FORTRAN, Pascal
Configurations: DEC/ULTRIX, Sun/Solaris2.1

Tool: DEC FUSE Call Graph Browser
Version: 1.2 | Release Date: 2/01/93
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 1/04/93 | Report Updated: 5/16/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: DEC FUSE Call Graph Browser is a structure checker.
Classification: Reengineering, Structure Checker
Features:
Languages Supported: Ada, C, C++, FORTRAN, Pascal
Configurations: DECstation/ULTRIX, Sun

Tool: DEC FUSE Cross-Reference
Version: 1.2 | Release Date: 2/01/93
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 1/04/93 | Report Updated: 5/16/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: DEC FUSE is a Cross Referencing Tool.
Classification: Coding, Cross Referencing Tool
Features:
Languages Supported: Ada, C, C++, FORTRAN, Pascal
Configurations: DECstation/ULTRIX, Sun

Tool: DEC/Test Manager (DTM)
Version: 11.2 | Release Date: 11/01/93
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 1/05/93 | Report Updated: 6/30/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: DEC/Test Manager automates regression testing. DTM runs user-supplied tests, and the results are automatically compared to their expected results. DTM operates in the interactive and batch modes and supports the DEC Windows environment.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager
Features:
Languages Supported: All
Configurations: Alpha AXP/Open VMS, VAX/Open VMS

Tool: DecisionVision 1 (DV1)
Version: 2.2 | Release Date: 12/01/93
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 4/01/94 | Report Updated: 6/30/94

Vendor: Software Business Management, Inc.
POC: Technical Support
Phone: 508-692-4145 Fax: 508-692-7151
E-mail:
Address: 234 Littleton Rd., Suite 2E
Westford, MA 01886

Description: DecisionVision 1 (DV1) collects and reports measurement information for managing the quality, cost, and schedules of software development projects. It captures code statistics at preset intervals for calculating, graphing and reporting volatility (code changes), reliability and complexity information.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Defect/Change Tracker, Reliability Analyzer, Reverse Engineering, Size Measurer, Structure Checker
Features: Automatic Data Collection, SLOC Actuals
Languages Supported: Ada, C, COBOL, FORTRAN
Configurations: Sun/Sun OS

Tool: DECset
Vendor: Digital Equipment Corp.

Version: 11.2 | Release Date: 11/01/93 | Number Sold: – | Single User Price: (Contact Vendor) | Report Date: 12/23/92 | Report Updated: 12/29/93

POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: DECset is a set of software engineering tools for the development, testing, and maintenance of application programs. The six components include SCA, LSE, CMS, MMS, PCA, and DTM.
Classification: Coding, Testing, Configuration Management, Quality Assurance, Reengineering, Auditor, Capture-Replay Tool, Coverage/Frequency Analyzer, Cross Referencing Tool, Language Sensitive Editor, Performance/Timing Analyzer, Syntax & Semantics Analyzer, Test Execution Manager
Features:
Languages Supported: Ada, C, COBOL, FORTRAN, Pascal, PL/1
Configurations: VAX/VMS

Tool: Defect Control System (DCS)
Vendor: The Software Edge Inc.

Version: 2.0 | Release Date: 10/01/93 | Number Sold: – | Single User Price: $495 | Report Date: 10/21/93 | Report Updated: 6/30/94
Newsletter Available
Evaluation Copy Available | Site License Available

POC: John Poss
Phone: 719-598-3713 Fax: 719-598-3970
E-mail: rdl@swedge.com
Address: 5526 N. Academy Blvd., Suite 204
Colordo, CO 80918

Description: Defect Control System is a defect tracking system that organizes and monitors software bug reports.
Classification: Testing, Project Management, Quality Assurance, Defect/Change Tracker, Reliability Analyzer
Features:
Languages Supported: –
Configurations: Window 3.0, PC/MS-DOS

Tool: DELTA
Vendor: Corporate Computer Systems

Version: 2.2 | Release Date: 5/03/87 | Number Sold: 200+ | Single User Price: $995 | Report Date: 1/05/93 | Report Updated: 6/30/94
Evaluation Copy Available

POC: Joan Dillon
Phone: 908-946-3800 Fax: 908-946-3800
E-mail:
Address: 33 W. Main St.
Holmdel, NJ 07733

Description: DELTA gives the minimum difference between two source files, includes ability to list side by side differences of two files.
Classification: Documentation, Configuration Management, Comparator
Features:
Languages Supported: All
Configurations: HP/1000, HP/3000

Tool: DESIGN GENERATOR
Vendor: Computer Sciences Corp.

Version: | Release Date: | Number Sold: – | Single User Price: $995 | Report Date: 3/07/94 | Report Updated: 6/30/94
Training Available

POC: Wayne Kelley
Phone: 703-876-1223 Fax:
E-mail:
Address: 3170 Fairview Park Dr.
Falls Church, VA 22042

Description: DESIGN GENERATOR supports the requirements analysis, preliminary design, and detailed design phases of the software development lifecycle. The tool provides data flow diagrams, entity-relationship attribute diagrams, state transition diagrams, and structure charts automatically capturing and maintaining significant amounts of data dictionary information. The tool supports both analysts and designers in developing structured design. The tool can also be to measure the complexity of software designs.
Classification: Requirements Trace, Design, Coding, Requirements Analysis, Testing, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Data Reengineering, Test Data Generator
Features:
Languages Supported:
Configurations: IBM, PC/MS-DOS

Tool: **Design Recovery Series**
Version: 1.01 Release Date: 5/01/92
Number Sold: 300 Single User Price: $3,750
Report Date: 1/27/93 Report Updated: 8/23/93
Training Available Newsletter Available
Site License Available

Vendor: **Intersolv**
POC: Brian Kelly
Phone: 617-252-4520 Fax: 617-494-8591
E-mail:
Address: 1 Main St.
Cambridge, MA 02142

Description: Design Recovery Series is designed for redevelopment of existing systems and for the integration into new development efforts. Facilitates conversion of VSAM, IMS databased to DB2.
Classification: Design, Documentation, Reengineering, Capture-Replay Tool, Forward Engineering, Reverse Engineering
Features:
Languages Supported: COBOL
Configurations: MS-DOS, MVS, Windows, PC/OS/2

Tool: **DesignGen**
Version: 2.0 Release Date: 1/01/93
Number Sold: 10+ Single User Price: $8,500
Report Date: 6/28/93 Report Updated: 12/07/93

Vendor: **Software Systems Design, Inc.**
POC: Dr. Thomas S. Radi
Phone: 714-625-6147 Fax: 714-626-9667
E-mail:
Address: 3627 Padua Ave.
Claremont, CA 91711

Description: DesignGen automates the transition from requirements to design and furnishes an object-oriented top-level design from RTSA data flow diagrams along with user inputs. Works with Teamwork and Software through Pictures.
Classification: Design, Requirements Analysis, Requirements-Based Test Case Generator
Features: Automatic generation of Ada structure
Languages Supported: Ada
Configurations: Apollo, DECstation, Gould, Harris, HP, MIPS, PC MS-DOS, RISC 6000, Sequent, VAX

Tool: **diff in Op Sys**
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 1/05/93 Report Updated: 12/29/93

Vendor: **Digital Equipment Corp.**
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: diff is the UNIX file comparator.
Classification: Coding, Testing, Comparator
Features:
Languages Supported: All
Configurations: UNIX, Alpha AXP/OSF

Tool: **Distributed Defect Tracking System (DDTs)**
Version: Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 8/04/93 Report Updated: 6/30/94

Vendor: **Qual Trak Corp.**
POC: Richard J. Lin
Phone: 408-748-9500 x121 Fax: 408-748-8468
E-mail: rjlin@qualtrak.com
Address: 3160 De La Cruz Blvd. Suite 206
Santa Clara, CA 95054

Description: DDTs is a debugger tool that detects bugs. It also allows you to submit bug reports to any project worldwide without knowing where the developers are located.
Classification: Coding, Testing, Debugger, Defect/Change Tracker
Features:
Languages Supported: C
Configurations: PC

Tool: Eagle
Vendor: QED Software Inc.

Version:	1.0	Release Date:	9/20/93	POC:	Bob Evans		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	408-995-0270	Fax:	408-995-0271
Report Date:	8/18/93	Report Updated:	6/30/94	E-mail:	qedsoft!rje@telebit.com		
Training Available				Address:	343 South 14th St.		
Evaluation Copy Available		Site License Available			San Jose, CA 95112		

Description: Eagle provides facilities to deal with changing software at a project level. Is navigation and browsing facilities operate within an editing environment. It also provides the ability to interactively view files, function and data.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Reuse, Software Engineering Environment, Redocumenter, Status Displayer, Structure Checker
Features:
Languages Supported: , C, FORTRAN
Configurations: C & Fortran on Windows 3.1, Windows/NT and UNIX

Tool: Eclipse 29K
Vendor: Step Engineering

Version:		Release Date:	7/01/92	POC:	Sales		
Number Sold:	200	Single User Price:	(Contact Vendor)	Phone:	408-733-7837	Fax:	408-773-1073
Report Date:	2/04/93	Report Updated:	5/25/94	E-mail:			
Training Available				Address:	Argues Ave., P.O. Box 3166		
		Site License Available			Sunnyvale, CA 94088-3166		

Description: Eclipse 29K is a hardware/software debugging environment for 29K RISC processors. It can be purchased with compiler tools and/or source-level debugger tools for a complete development environment.
Classification: Coding, Testing, Quality Assurance, Reengineering, Software Engineering Environment, Assembler, Compiler, Cross Referencing Tool, Data Reducer & Analyzer, Debugger, Linker, Performance/Timing Analyzer, Test Instrumenter
Features:
Languages Supported: Assembler, C, C++
Configurations: 29000, 29030, 29050, 29200, 29205, 29240, 2924b; PC, Sun

Tool: ENDEVOR
Vendor: Legent Corp.

Version:	–	Release Date:		POC:	Steven King		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-726-1637	Fax:	508-836-5992
Report Date:	1/07/93	Report Updated:		E-mail:			
				Address:	575 Herndon Parkway		
					Herndon, VA 22070		

Description: ENDEVOR will compare and integrate three versions of source code automatically.
Classification: Testing, Configuration Management, Comparator
Features:
Languages Supported: COBOL, DB2
Configurations: OS/2, IBM/MVS, PC/MS-DOS

Tool: Enforcer I
Vendor: Clarity Concepts Systems

Version:	6	Release Date:	1/01/84	POC:	Jerry Sitner		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	212-254-3358	Fax:	–
Report Date:	1/27/93	Report Updated:	7/01/94	E-mail:			
				Address:	14 Washington Pl.		
Evaluation Copy Available		Site License Available			New York, NY 10003		

Description: Enforcer I is a quality assurance COBOL programming standards monitor. It's main purpose is to support the "clarity coding" concept. It can be used to assure clear understandable COBOL coding and reduces maintenance cost.
Classification: Coding, Documentation, Configuration Management, Quality Assurance, Metrics, Reengineering, Auditor, Code Change Monitor, Complexity Measurer, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: COBOL
Configurations: MVS, VSE, IBM

Tool: **Enforcer II**
Vendor: **Clarity Concepts Systems**

Version: 6 | Release Date: 1/01/84 | POC: Jerry Sitner
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 212-254-3358 | Fax: –
Report Date: 1/27/93 | Report Updated: 7/01/94 | E-mail:
Address: 14 Washington Pl., New York, NY 10003
Evaluation Copy Available | Site License Available

Description: Enforcer II is a quality assurance COBOL II programming standards monitor. It's main purpose is to support the "clarity coding" concept. It can be used to assure clear understandable COBOL coding and reduces maintenance cost.
Classification: Coding, Documentation, Configuration Management, Quality Assurance, Metrics, Reengineering, Auditor, Code Change Monitor, Complexity Measurer, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: COBOL II
Configurations: MVS, VSE, IBM

Tool: **Ensemble**
Vendor: **Cadre Technologies, Inc.**

Version: – | Release Date: | POC: Jeff Jenks
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 408-562-0106 | Fax: 408-727-1163
Report Date: 4/06/93 | Report Updated: 5/16/94 | E-mail:
Address: 2880 Lakeside Dr., Suite 231, Santa Clara, CA 95054

Description: Ensemble is a collection of forward and reverse engineering tools. It captures design information and stores it in its design database, documents the design, generates test cases, and analyzes test completeness, among other capabilities.
Classification: Design, Coding, Testing, Quality Assurance, Reengineering, Complexity Measurer, Coverage/Frequency Analyzer, Cross Referencing Tool, Forward Engineering, Requirements-Based Test Case Generator, Reverse Engineering, Structure Checker
Features:
Languages Supported: C
Configurations: AIX, Sun OS, ULTRIX

Tool: **Environment for Code Reengineering (ENCORE)**
Vendor: **General Electric Co. (R & D)**

Version: 2.1 | Release Date: 6/01/92 | POC: Joel N. Sturman
Number Sold: – | Single User Price: $Contact Vendor | Phone: 518-387-5457 | Fax: 518-387-6928
Report Date: 1/28/93 | Report Updated: 7/01/94 | E-mail:
Address: Bldg K-1 Room 3C1, PO Box 8, Schenectady, NY 12301
Site License Available

Description: ENCORE is a graphical environment that supports code Reengineering tasks including code translation from FORTRAN to Ada, control restructuring, data restructuring, and repackaging. It is available as a result of a translation service.
Classification: Coding, Reengineering, Reuse, Software Engineering Environment, Complexity Measurer, Data Reengineering, Restructurer, Source Code Translator
Features:
Languages Supported: CMS-2, FORTRAN, JOVIAL
Configurations: Sun 3, Sun 4 (Sparc 1+, Sparc2, etc.)

Tool: **ES RE/Vision**
Vendor: **Eden Systems Corp.**

Version: 2.4 | Release Date: 1/01/92 | POC: Melisa Duffy
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 800-288-9510 | Fax: 317-843-2271
Report Date: 4/08/93 | Report Updated: 7/01/94 | E-mail:
Training Available | Newsletter Available
Address: 9302 N. Meridian St., Suite 350, Indianapolis, IN 46260-1820
Evaluation Copy Available | Site License Available

Description: ES RE/Vision combined, Q/AUDITOR and Q/ARTISAN let the user evaluate, improve and accept COBOL programs. The COBOL portfolio is measured and kept and rewritten selectively with the senior programmer's skill.
Classification: Coding, Documentation, Project Management, Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Auditor, Complexity Measurer, Reliability Analyzer, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: COBOL
Configurations: IBM/MVS, PC

Tool: esVS
Vendor: B-TREE SOFTWARE, Inc.

Version:		Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	612-474-3756	Fax:	612-474-5920
Report Date:	7/23/92	Report Updated:	7/01/94	E-mail:			
Training Available				Address:	17815 Hutchins Dr.		
Evaluation Copy Available					Minnetonka, MN 55345		

Description: esVS Software Verification Station is a nonintrusive, real time, software verification system for products with single or multiple embedded processors.
Classification: Testing, Quality Assurance, Software Engineering Environment, Auditor, Validation Suite
Features:
Languages Supported:
Configurations:

Tool: ESW Code Change
Vendor: ViaSoft, Inc.

Version:	2.0	Release Date:	1/01/92	POC:	Daniel T. Wiseman		
Number Sold:	300+	Single User Price:	(Contact Vendor)	Phone:	303-740-6668	Fax:	303-740-6758
Report Date:	6/30/93	Report Updated:	7/07/94	E-mail:			
Training Available		Newsletter Available		Address:	4600 S. Ulster St., Suite 700		
		Site License Available			Denver, CO 80237		

Description: Provides language-sensitive extensions to the ISPF editor, identifies syntax errors automatically, locates related COBOL verbs and data fields, builds tree-like representations of execution control flow and extends the FIND command.
Classification: Coding, Reengineering, Language Sensitive Editor, Syntax & Semantics Analyzer
Features:
Languages Supported: CICS, COBOL, COBOL II, DB2, IDMS
Configurations: MVS/XA, MVS/ESA, ISPF 2.2+

Tool: ESW Profile Analysis (VIA/Recap)
Vendor: ViaSoft, Inc.

Version:	2.0	Release Date:	12/01/92	POC:	Daniel T. Wiseman		
Number Sold:	–	Single User Price:	$19,500-$88,000	Phone:	303-740-6668	Fax:	303-740-6758
Report Date:	6/30/93	Report Updated:	5/16/94	E-mail:			
Training Available		Newsletter Available		Address:	4600 S. Ulster St., Suite 700		
Evaluation Copy Available		Site License Available			Denver, CO 80237		

Description: Provides enterprise, application and program measurement used for redevelopment planning and establishing a baseline of metrics and functions points to develop a continuous improvement program.
Classification: Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Reliability Analyzer, Size Measurer
Features: Function Points
Languages Supported: COBOL, COBOL II
Configurations: MVS/XA, MVS/ESA, ISPF, OS/2

Tool: ESW Testing
Vendor: ViaSoft, Inc.

Version:	3.1	Release Date:	1/01/93	POC:	Daniel T. Wiseman		
Number Sold:	600+	Single User Price:	(Contact Vendor)	Phone:	303-740-6668	Fax:	303-740-6758
Report Date:	6/30/93	Report Updated:	7/07/94	E-mail:			
Training Available		Newsletter Available		Address:	4600 S. Ulster St., Suite 700		
		Site License Available			Denver, CO 80237		

Description: ESW Testing facility integrates an interactive tester/debugger with an on-line repository of program structure information. It provides an interactive execution environment with single step by statement or logic blocks, and the ability to trace back.
Classification: Coding, Testing, Debugger, Structure Checker
Features:
Languages Supported: Assembler, CICS, COBOL, COBOL II, DB2, IDMS, PL/1
Configurations: MVS/ESA, MVS/XA, ISPF 2.2+

Tool: Evaluator
Version: – Release Date: 6/01/93
Number Sold: 1,500 Single User Price: $6,500
Report Date: 1/07/93 Report Updated: 7/01/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Eastern Systems, Inc.
POC: Gregory Hayes
Phone: 303-740-6668 Fax: 303-740-6758
E-mail:
Address: 4600 S. Ulster St., Suite 700
Denver, CO 80237

Description: Evaluator is a hardware-assisted, automatic regression software tester for XT/AT/386 PCs. Benchmarking and stress testing any software running on a PC and O/S independent. Testing supports both text and GUI interfaces.
Classification: Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager
Features:
Languages Supported: All
Configurations: Any ISA/EISA/MCA Bus system-Separate host and target computer required

Tool: Excelerator for Design Recovery
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/27/93 Report Updated: 7/01/94

Vendor: Intersolv
POC: Tech. Support (InTeCo)
Phone: 800-777-8858 Fax: 617-557-8945
E-mail:
Address: One Main St.
Cambridge, MA 02142

Description: Excelerator for Design Recovery reads existing applications, extracts design information, and imports the designs into the powerful Excelerator environment. It automatically generates diagrams as well as data definitions.
Classification: Coding, Metrics, Reengineering, Complexity Measurer, Forward Engineering, Redocumenter, Reverse Engineering, Size Measurer, Structure Checker, Syntax & Semantics Analyzer
Features: SLOC Actuals
Languages Supported: COBOL
Configurations: PC/MS-DOS

Tool: Excell 930
Version: Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/15/93 Report Updated: 7/01/94
Training Available
Site License Available

Vendor: Step Engineering
POC: Sales
Phone: 408-733-7837 Fax: 408-773-1073
E-mail:
Address: Argues Ave., P.O. Box 3166
Sunnyvale, CA 94088-3166

Description: Excell 930 is a hardware/software debugging environment for 930 SPARClite processors. It can be overhosed with a source-level debugger/programmers development environment and compiler tools for a complete, integrated development environment.
Classification: System Simulation, Requirements Trace, Design, Coding, Requirements Analysis, Testing, Reengineering, Code Generator, Cross Referencing Tool, Debugger, Emulator, Retargeting, Structure Checker
Features:
Languages Supported: Assembler, C, C++
Configurations: PC, Sun

Tool: Existing Systems Workbench (ESW)
Version: 1.0 Release Date: 1/01/91
Number Sold: – Single User Price: $60,000-$262,000
Report Date: 2/04/93 Report Updated: 5/16/94
Training Available Newsletter Available
Evaluation Copy Available

Vendor: ViaSoft, Inc.
POC: Daniel T. Wiseman
Phone: 303-740-6668 Fax: 303-740-6758
E-mail:
Address: 4600 S. Ulster St., Suite 700
Denver, CO 80237

Description: ESW is an integrated environment for maintaining, enhancing, reverse engineering, and Reengineering existing COBOL programs. Consists of VIA/Insight, VIA/SmartEDIT, VIA/Renaissance for Reengineering.
Classification: Coding, Testing, Documentation, Reengineering, Reuse, Debugger, Reverse Engineering, Structure Checker
Features:
Languages Supported: COBOL
Configurations: IBM mainframes and compatibles, MVS-XA/ESA.

Tool: Expert Debugging Software Assistant (EDSA)
Vendor: Array Systems Computing Products, Inc.

Version:	2.0	Release Date:	8/01/91	POC:	Leonard Vanek		
Number Sold:	25+	Single User Price:	$3,750	Phone:	416-736-0900	Fax:	416-736-4715
Report Date:	1/26/93	Report Updated:		E-mail:			
				Address:	401 Magnetic Dr., Units 24-26		
Evaluation Copy Available					Downsview, ON M3J-3H9 Canada		

Description: EDSA is an intelligent assistant that analyzes code and transmits its knowledge to you. It has control and data flow browsing, correctness verification and search management.
Classification: Coding, Testing, Quality Assurance, Reengineering, Debugger, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations: UNIX, MS-DOS, Sun/SunOS, VAX/VMS

Tool: Express 960
Vendor: Step Engineering

Version:		Release Date:	6/01/92	POC:	Sales		
Number Sold:	200	Single User Price:	(Contact Vendor)	Phone:	408-733-7837	Fax:	408-773-1073
Report Date:	2/04/93	Report Updated:	7/01/94	E-mail:			
Training Available				Address:	Argues Ave., P.O. Box 3166		
		Site License Available			Sunnyvale, CA 94088-3166		

Description: The Express-i960Cx is a hardware/software debugging environment for i960 RISC processors that can be purchased with source-level debugger or compiler tools for a complete development environment.
Classification: Coding, Testing, Quality Assurance, Reengineering, Software Engineering Environment, Assembler, Compiler, Cross Referencing Tool, Data Reducer & Analyzer, Debugger, Performance/Timing Analyzer, Test Instrumenter
Features:
Languages Supported: Assembler, C, C++
Configurations: PC, Sun

Tool: F-SCAN
Vendor: Intl. Logic Corp.

Version:	1.1	Release Date:	6/01/87	POC:	Technical Support		
Number Sold:	15+	Single User Price:	$4,950	Phone:	415-989-7223	Fax:	415-989-0252
Report Date:	1/26/93	Report Updated:		E-mail:			
Training Available		Newsletter Available		Address:	100 Pine St., Suite 2760		
Evaluation Copy Available					San Francisco, CA 94111		

Description: F-SCAN is a static analyzer of FORTRAN source programs that provides call trees, Cross Referencing Tools, and analysis of code interfaces.
Classification: Coding, Requirements Analysis, Documentation, Configuration Management, Quality Assurance, Reengineering, Cross Referencing Tool, Redocumenter, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN, PL/1
Configurations: DEC, DG, IBM, Prime

Tool: FCount
Vendor: SAIC-Dayton

Version:		Release Date:		POC:	Debbie Dyer		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	619-535-7652	Fax:	619-546-6833
Report Date:	3/31/94	Report Updated:	7/01/94	E-mail:			
				Address:	10260 Campus Point Dr., M/S 12		
					San Diego, CA 92121		

Description: FCount line counter available as Ada source code, and counts logical FORTRAN lines of code.
Classification: Quality Assurance, Metrics, Size Measurer
Features: SLOC Actuals
Languages Supported: FORTRAN
Configurations: Mac, PC/MS-DOS, UNIX

Tool: FERRETT

Version:	13.3	Release Date:	12/01/91
Number Sold:	10+	Single User Price:	(Contact Vendor)
Report Date:	1/07/93	Report Updated:	7/01/94

Evaluation Copy Available

Vendor: Tiburon Systems, Inc.

POC: Gregory M. Pope
Phone: 408-371-9400 Fax: 408-371-2518
E-mail:
Address: 2085 Hamilton Ave.
San Jose, CA 95125

Description: FERRET is a Computer-Aided Software Test (CAST) workstation. It automates test design and regression testing, is nonintrusive, and works with most languages, OSs, windows, and hardware.

Classification: Requirements Trace, Design, Coding, Testing, Quality Assurance, Reuse, Capture-Replay Tool, Status Displayer, Test Execution Manager

Features: GUI-based Testing, Text-based Testing

Languages Supported: All

Configurations: Apollo, Harris, Honeywell, HP, IBM, Mac, PC/MS-DOS, PC/Window 3.0, Plexus, Prime, Pyramid, Rainbow, Rational, Sequent, SGraphics, Sperry, Sun, UNIX

Tool: File Edit Utility (FEU)

Version:	2.0	Release Date:	1/01/84
Number Sold:	25,000+	Single User Price:	$795
Report Date:	1/07/93	Report Updated:	5/16/94

Training Available
Evaluation Copy Available Site License Available

Vendor: Applied Logic Corp.

POC: Technical Support
Phone: 503-362-9131 Fax: --
E-mail:
Address: 245 Court St. NE
Salem, OR 97301

Description: FEU is an AS/400 or S/36 software utility that allows users to access any file without any setup or programming. Allows additions, deletions, and changes under various "formats." Includes global search/replace, audit report and custom capabilities.

Classification: Coding, Testing, Quality Assurance, Reengineering, Database, Auditor, Data Extractor, Debugger, Test Data Generator

Features:

Languages Supported: Assembler, RPG II

Configurations: AS/400, SYSTEM 36

Tool: FIRSTCASE

Version:	3.0	Release Date:	10/01/92
Number Sold:	55	Single User Price:	$15K-$70K
Report Date:	1/07/93	Report Updated:	7/01/94

Training Available

Vendor: AGS Management Systems

POC: Mike Marcus
Phone: 800-678-8484 Fax: 215-265-1230
E-mail:
Address: 880 First Ave.
King of Prussia, PA 19406

Description: FIRSTCASE is a fully automated PC-based support framework for systems development that includes process management (Systems Development Methodology), estimating support, project management, CASE tool development management, and deliverables management. It provides tools, techniques, and procedures that are used over the system development lifecycle, and its methodology guides the development team in the proper selection, use, and performance of those tools, techniques, and procedures. The estimation capabilities include function point analysis. FIRSTCASE is designed to complement existing CASE tools. It provides a shell or platform into which the user can plug in CASE tools of the user's choice, thereby supporting the "best of breed" selection of CASE tools. FIRSTCASE incorporates five standard system lifecycles, including one for maintenance and another for purchased software.

Classification: Coding, Project Management, Configuration Management, Quality Assurance, Metrics, Reengineering, Data Reducer & Analyzer, Size Measurer

Features: Function Points

Languages Supported: --

Configurations: OS/2, Windows, PC/MS-DOS

Tool: FlexeLint
Vendor: Gimpel Software

Version:	6.0	Release Date:	3/10/94	POC:	Anna Gimpel		
Number Sold:	100+	Single User Price:	$998	Phone:	215-584-4261	Fax:	215-584-4266
Report Date:	11/21/91	Report Updated:	7/01/94	E-mail:			
				Address:	3207 Hogarth Ln.		
		Site License Available			Collegeville, PA 19426		

Description: FlexeLint provides a source code analysis facility that analyses C and C++ programs to help locate bugs and portability problems. FlexeLint is Computer Innovations' port of PC-Lint from Gimpel Software. Both traditional (K&R) and modern (ANSI) C dialects, as well as POSIX, are supported.
Classification: Coding, Testing, Reengineering, Software Engineering Environment, Syntax & Semantics Analyzer
Features:
Languages Supported: C, C++
Configurations: PC/MS-DOS, UNIX, VAX/VMS

Tool: FORCE
Vendor: Personyx

Version:	1.4	Release Date:	10/10/93	POC:	Linda Maloney		
Number Sold:	–	Single User Price:	$130	Phone:	719-475-8781	Fax:	–
Report Date:	8/03/92	Report Updated:	7/01/94	E-mail:	73007.502@compuserve.com		
				Address:	314 E. San Rafael St.		
Evaluation Copy Available		Site License Available			Colorado Springs, CO 80903-2406		

Description: FORCE is a Fortran-to-C/C++ translator and analysis system. It emits C or C++, generates a global cross-reference, a metrics report, a calling hierarchy, and others.
Classification: Metrics, Reengineering, Reuse, Software Engineering Environment, Code Generator, Complexity Measurer, Cross Referencing Tool, Forward Engineering, Maintainability Analyzer, Reverse Engineering, Source Code Translator, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: UNIX/MS-DOS

Tool: FORCHECK
Vendor: OTG Systems, Inc.

Version:	–	Release Date:		POC:	Tammy Gillen		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	717-343-8200	Fax:	717-222-9103
Report Date:	1/07/93	Report Updated:	7/01/94	E-mail:			
				Address:	Route 106, Suite 300, PO Box 239		
					Clifford, PA 18413-0239		

Description: FORCHECK is an auditor, structure checker, a syntax & semantics analyzer, and a Cross Referencing Tool.
Classification: Coding, Quality Assurance, Reengineering, Auditor, Cross Referencing Tool, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: Apollo, IBM, PC/MS-DOS, PDP, Prime, VAX

Tool: FORTRAN Reverse Eng & Document System (FREDoc)
Vendor: Software Systems Design, Inc.

Version:	1.0	Release Date:	1/01/92	POC:	Dr. Thomas S. Radi		
Number Sold:	3+	Single User Price:	(Contact Vendor)	Phone:	714-625-6147	Fax:	714-626-9667
Report Date:	1/26/93	Report Updated:	12/07/93	E-mail:			
				Address:	3627 Padua Ave.		
Evaluation Copy Available		Site License Available			Claremont, CA 91711		

Description: The FREDoc tools give the ability to reverse engineer existing FORTRAN code and to understand the design. It helps make sure comment headers are correct and provides two ways of looking at the system-top level or detailed.
Classification: Coding, Documentation, Reengineering, Auditor, Reverse Engineering, Structure Checker
Features:
Languages Supported: FORTRAN
Configurations: DG, HP/VMS, MS-DOS, RISC 6000, SUN/VMS, UNIX/VMS, VAX/VMS

Tool: Fortran Utility System
Version: –
Number Sold: –
Report Date: 1/07/93
Release Date:
Single User Price: (Contact Vendor)
Report Updated:

Vendor: Digital Sciences, Inc.
POC: Technical Support
Phone: 908-549-1700 Fax: –
E-mail:
Address: 35 Dogwood Dr.
Edison, NJ 08837

Description: Fortran Utility System is a performance/timing analyzer.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: FORTRAN
Configurations: CDC, Cray, DEC, IBM, UNISYS1100

Tool: FORTRAN VERIFIER
Version: –
Number Sold: –
Report Date: 1/07/93
Release Date:
Single User Price: (Contact Vendor)
Report Updated:

Vendor: Norwegian Technical University
POC: Technical Support
Phone: Fax:
E-mail:
Address: 7034 Trondheim

Description: FORTRAN VERIFIER is a static analyzer made by Peter Conradi.
Classification: Coding, Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: --
Configurations:

Tool: FORTRAN-lint
Version: –
Number Sold: –
Report Date: 3/03/93
Release Date:
Single User Price: (Contact Vendor)
Report Updated:

Vendor: Information Processing Techniques Corp.
POC: Ron Charters
Phone: 415-494-2758 Fax: 415-494-2758
E-mail:
Address: 2 Brookside Lane
Mansfield Center, CT 06250

Description: FORTRAN-lint is a static analyzer that detects coding problems similar to what lint utilities do for C programs. The tool does parameter checking and type checking of variables. Other checks include the use of variables before declaration and nonuse.
Classification: Coding, Documentation, Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: DG MV/AOS/VS, RISC 6000, Sun/Sun OS, VAX/VMS

Tool: FORWARN
Version: 3.0
Number Sold: –
Report Date: 1/26/93
Release Date: 8/01/89
Single User Price: $399
Report Updated: 7/01/94

Site License Available

Vendor: Quibus Enterprises, Inc.
POC: Technical Support
Phone: 415-494-2758 Fax: 415-494-2758
E-mail:
Address: 2 Brookside Lane
Mansfield Center, CT 06250

Description: FORWARN is a static analysis tool designed for FORTRAN programs. Using this product improves the reliability, documentation quality, and portability of FORTRAN systems. It furnishes detailed cross reference listings and calling-trees.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Cross Referencing Tool, Reliability Analyzer, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: MS-DOS, PC/OS/2, UNIX, VAX/VMS

Tool: FOR_STRUCT
Vendor: Cobalt Blue, Inc.

Version:	2.1	Release Date:	12/01/93	POC:	Beverley Lightfoot		
Number Sold:	–	Single User Price:	$825+	Phone:	404-518-1116	Fax:	404-640-1182
Report Date:	1/07/93	Report Updated:	1/03/94	E-mail:			
Training Available				Address:	875 Old Roswell Rd., Suite D-400		
Evaluation Copy Available		Site License Available			Roswell, GA 30076		

Description: Transforms spagetti FORTRAN-IV and FORTRAN-77 into structured code. Five structuring levels are offered with dozens of output style options. Preserves the original code logic and can remove dead code. Dead segments are removed.
Classification: Coding, Reengineering, Reformatter, Restructurer, Structure Checker
Features:
Languages Supported: FORTRAN
Configurations: HP, PC/MS-DOS, RISC 6000, Sun/Sun OS, VAX/VMS

Tool: FOR_STUDY
Vendor: Cobalt Blue, Inc.

Version:	1.1	Release Date:	9/01/93	POC:	Beverley Lightfoot		
Number Sold:	–	Single User Price:	$450+	Phone:	404-518-1116	Fax:	404-640-1182
Report Date:	7/22/93	Report Updated:	7/01/94	E-mail:			
Training Available				Address:	875 Old Roswell Rd., Suite D-400		
		Site License Available			Roswell, GA 30076		

Description: FOR_STUDY is a FORTRAN code analysis tool to detect hidden bugs, locate excess code and to generate valuable programmer's documentation for clear and thorough understanding of FORTRAN programs.
Classification: Coding, Testing, Documentation, Reengineering, Cross Compiler, Debugger, Defect/Change Tracker, Redocumenter
Features:
Languages Supported: FORTRAN
Configurations: HP-UX, PC/MS-DOS, Sun/Sun OS

Tool: Foundation Vista10
Vendor: Menlo Business Systems, Inc.

Version:	4.1	Release Date:	6/01/91	POC:	Gary Bell		
Number Sold:	300+	Single User Price:	$7,900	Phone:	415-948-7920	Fax:	415-949-6655
Report Date:	1/07/93	Report Updated:	6/07/94	E-mail:			
		Newsletter Available		Address:	201 Main St.		
Evaluation Copy Available					Los Altos, CA 94022		

Description: Foundation Vista's purpose is the design and analysis of software applications. It is a fully integrated, multiuser, repository driven, design/analysis tool.
Classification: Design, Requirements Analysis, Documentation, Reengineering, Database, Forward Engineering, Redocumenter, Reverse Engineering, Structure Checker
Features:
Languages Supported: C++
Configurations: Mac/Mac OS

Tool: FPT
Vendor: COSMIC

Version:	–	Release Date:		POC:	Ruthann Jones		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	415-948-7920	Fax:	415-949-6655
Report Date:	1/07/93	Report Updated:	7/01/94	E-mail:			
				Address:	201 Main St.		
					Los Altos, CA 94022		

Description: FPT is a debugger and performance analyzer.
Classification: Coding, Testing, Debugger, Performance/Timing Analyzer
Features:
Languages Supported: FORTRAN
Configurations: VAX/VMS

Tool: gprof
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated: 7/01/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: gprof provides call profile/count information.
Classification: Coding, Reengineering, Structure Checker
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: GPSA
Version: 2.0 Release Date: 11/01/91
Number Sold: 4 Sites Single User Price: $8,000
Report Date: 1/27/93 Report Updated: 7/01/94

Vendor: COBOL Maintenance Technologies
POC: Gordon Pannell
Phone: 619-429-0121 Fax: –
E-mail:
Address: PO Box 122069
Chula Vista, CA 91912

Evaluation Copy Available Site License Available
Description: GPSA is a system-wide COBOL analysis and documentation toolset. An interactive viewing facility and 26 reports provide complex cross-reference of every program, copybook, paragraph and data-name.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Cross Referencing Tool, Reusable Components Identifier, Reverse Engineering, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: MS-DOS 3.3

Tool: GrafBrowse
Version: 2.3 Release Date: 2/01/92
Number Sold: 20 Single User Price: $5,000
Report Date: 6/28/93 Report Updated: 7/01/94

Vendor: Software Systems Design, Inc.
POC: Dr. Thomas S. Radi
Phone: 714-625-6147 Fax: 714-626-9667
E-mail:
Address: 3627 Padua Ave.
Claremont, CA 91711

Evaluation Copy Available Site License Available
Description: GrafBrowse is a graphical reverse engineering system and interactive browser for Ada, C, and FORTRAN source codes and design. It analyzes codes for certain metrics.
Classification: Design, Coding, Documentation, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Cross Referencing Tool, Reverse Engineering, Size Measurer
Features: SLOC Actuals
Languages Supported: Ada, C, FORTRAN
Configurations: Apollo, VMS, DECstation UNIX, Gould, Harris SPARC, HP, MIPS, PC MS-DOS,RISC 6000

Tool: HARMONIZER
Version: -- Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated:

Vendor: Aldon Computer Group
POC: Technical Support
Phone: 510-839-3535 Fax: 510-839-2894
E-mail:
Address: 401 15th St.
Oakland, CA 94612

Description: HARMONIZER compares files to determine differences.
Classification: Testing, Comparator
Features:
Languages Supported: All
Configurations:

Tool: Hindsight
Vendor: Advanced Software Automation, Inc.

Version:	2.1	Release Date:	1/31/92	POC:	Bonnie Faber		
Number Sold:	150+	Single User Price:	$2,500-7,450	Phone:	408-492-1668	Fax:	408-492-1669
Report Date:	1/07/93	Report Updated:	7/01/94	E-mail:			
Training Available				Address:	2880 Lakeside Dr., Suite 226		
Evaluation Copy Available					Santa Clara, CA 95054		

Description: Hindsight consists of the three utilities: AutoAnalyzer, AutoDiagrammer, and AutoStructureChart. See these tools for more information.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Reuse, Complexity Measurer, Coverage/Frequency Analyzer, Cross Referencing Tool, Performance/Timing Analyzer, Reliability Analyzer, Reverse Engineering, Size Measurer, Structure Checker, Syntax & Semantics Analyzer, Test Instrumenter
Features: SLOC Actuals
Languages Supported: C, C++, FORTRAN
Configurations: Sun Sparc (SunOS), HP 9000/400/700/800 (HP-UX), IBM RS6000 (ATX), DEC 5000

Tool: Hiperstation
Vendor: Peregrine Systems, Inc.

Version:	4.3	Release Date:	4/01/93	POC:	Craig Stavert		
Number Sold:	100+	Single User Price:	(Contact Vendor)	Phone:	619-431-2400	Fax:	619-431-0696
Report Date:	1/07/93	Report Updated:	7/01/94	E-mail:			
Training Available		Newsletter Available		Address:	1959 Palomar Oaks Way		
Evaluation Copy Available		Site License Available			Carlsbad, CA 92009		

Description: Hiperstation is a TSO/ISPF-based tool that automates application and system software testing in all MVS VTAM on-line environments, including CICS, IMS/DC, TSO/ISPF, IDMS/DC or any VTAM subsystem. The REXX interface allows the user to create tests.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Data Generator, Test Execution Manager
Features:
Languages Supported: CICS
Configurations: MVS

Tool: Hiperstation MP (HS/MP)
Vendor: Peregrine Systems, Inc.

Version:	1.0	Release Date:	1/01/93	POC:	Craig Stavert		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	619-431-2400	Fax:	619-431-0696
Report Date:	12/08/93	Report Updated:	7/01/94	E-mail:			
Training Available		Newsletter Available		Address:	1959 Palomar Oaks Way		
Evaluation Copy Available		Site License Available			Carlsbad, CA 92009		

Description: HS/MP is a microsoft windows-based automated testing tool for GUI and text-based applications. Tests any software application or system platform that can be accessed from windows.
Classification: System Simulation, Testing, Quality Assurance, Capture-Replay Tool, Session Documenter, Test Data Generator, Test Execution Manager
Features: Screen capture
Languages Supported: --
Configurations: Windows

Tool: HP 64000-UX Micro. Software Dev.
Vendor: Hewlett-Packard

Version:	--	Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	818-505-5600	Fax:	--
Report Date:	1/07/93	Report Updated:	7/01/94	E-mail:			
				Address:	19447 Pruneridge Ave.		
					Cupertino, CA 95014		

Description: The HP 64000-UX microprocessor development environment is a complete software design, system integration, and test environment for developing products with embedded microprocessors.
Classification: Coding, Testing, Quality Assurance, Software Engineering Environment, Coverage/Frequency Analyzer, Debugger, Emulator, Simulator
Features:
Languages Supported: Assembler, C
Configurations: HP-9000/HP-UX

Tool: **HP Ada/300 Development System**
Vendor: **Hewlett-Packard**

Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated: 7/01/94

POC: Joe Courant
Phone: 801-974-1700 Fax: 801-974-1780
E-mail:
Address: 3530 W. 2100 S.
Salt Lake City, UT 84119

Description: This is a complete development system and execution environment. It includes the AdaProbe symbolic debugger, the AdaXref Cross Referencing Tool, and AdaFormat Ada source reformatter.
Classification: Coding, Testing, Reengineering, Compiler, Cross Referencing Tool, Debugger, Reformatter
Features:
Languages Supported: Ada
Configurations: HP-9000

Tool: **HP AxAda Programming Support Environment**
Vendor: **Hewlett-Packard**

Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated:

POC: Technical Support
Phone: 818-505-5600 Fax: –
E-mail:
Address: 19447 Pruneridge Ave.
Cupertino, CA 95014

Description: The HP AxAda Programming Support Environment (APSE) provides development tools to support the entire lifecycle of the Ada-based embedded design from requirements to post-release maintenance.
Classification: Coding, Testing, Quality Assurance, Software Engineering Environment, Coverage/Frequency Analyzer, Debugger, Emulator, Performance/Timing Analyzer, Simulator
Features:
Languages Supported: Ada
Configurations: HP-9000/HP-UX

Tool: **HP Branch Validator**
Vendor: **Hewlett-Packard**

Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated:

POC: Technical Support
Phone: 818-505-5600 Fax: –
E-mail:
Address: 19447 Pruneridge Ave.
Cupertino, CA 95014

Description: HP Branch Validator simplifies and enhances the software test validation process by providing branch coverage information.
Classification: Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer
Features:
Languages Supported: C, C++
Configurations: HP

Tool: **HP Softbench**
Vendor: **Hewlett-Packard**

Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated: 7/01/94

POC: Technical Support
Phone: 818-505-5600 Fax: –
E-mail:
Address: 19447 Pruneridge Ave.
Cupertino, CA 95014

Description: HP Softbench is an X-Window-based software development environment consisting of both an integrated set of software development tools and a Tool Integration Platform. Tools are provided for editing, building, debugging, and static analyzing.
Classification: Coding, Testing, Reengineering, Software Engineering Environment, Compiler, Debugger, Language Sensitive Editor, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada, C, FORTRAN
Configurations: HP-9000/HP-UX

Tool: InnerVue
Vendor: Performance Awareness Crop.

Version:	--	Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	801-974-1700	Fax:	801-974-1780
Report Date:	1/07/93	Report Updated:	6/01/94	E-mail:			
				Address:	3530 W. 2100 S. Salt Lake City, UT 84119		

Description: InnerVue provides a unique real-time view of many of the different aspects of a UNIX systems performance. Over 30 different metrics may be monitored and displayed in a graphical format on a PC.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: PC/MS-DOS

Tool: Insight
Vendor: Rational

Version:	--	Release Date:		POC:	Dan Maes		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	303-986-2006	Fax:	303-986-0205
Report Date:	1/07/93	Report Updated:		E-mail:			
				Address:	165 So. Union Blvd., Suite 604 Lakewood, CO 80228		

Description: Insight allows you to reengineer and maintain Ada software. Insight gathers information about the code and displays both object-oriented module diagrams.
Classification: Coding, Documentation, Reengineering, Reverse Engineering, Structure Checker
Features:
Languages Supported: Ada
Configurations: RISC 6000, Sun

Tool: Instant-C
Vendor: Rational Systems, Inc.

Version:	5.0	Release Date:	1/01/92	POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	508-653-6006	Fax:	508-655-2753
Report Date:	1/07/93	Report Updated:	5/23/94	E-mail:			
				Address:	220 N. Main St. Natick, MA 01760		

Description: Instant-C allows the user to generate high-quality code quicker and more efficiently. It increases productivity by combining a linker and an incremental compiler with automatic static and run-time error detection.
Classification: Coding, Testing, Compiler, Cross Referencing Tool, Debugger, Linker, Recompiler, Simulator, Syntax & Semantics Analyzer
Features: Run-Time Error Detection
Languages Supported: C
Configurations: PC

Tool: IntegrAda
Vendor: Aetech

Version:	--	Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	$95-$695	Phone:	303-986-2006	Fax:	303-986-0205
Report Date:	3/03/93	Report Updated:	5/16/94	E-mail:			
Training Available		Newsletter Available		Address:	165 So. Union Blvd., Suite 604		
		Site License Available			Lakewood, CO 80228		

Description: IntegrAda is an integrated Ada Programming Support Environment (APSE) with a production-quality compiler that has been fully validated by the gov't to the latest Ada Compiler Validation Capability (ACVC1.10).
Classification: Coding, Documentation, Reengineering, Software Engineering Environment, Code Generator, Commenter, Compiler, Forward Engineering, Linker, Reformatter, Session Documenter, Structure Checker
Features: Ada language sensitive editing
Languages Supported: Ada
Configurations: PC/MS-DOS

Tool: Intek C++

Version: 2.1 | Release Date: 1/01/87
Number Sold: 6,000 | Single User Price: $599-$699
Report Date: 1/07/93 | Report Updated: 7/01/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: Intek Integration Technologies
POC: Nels Paine
Phone: 503-243-3660 Fax: 503-243-3821
E-mail:
Address: 521 S.W. 11th Ave., Suite 306
Portland, OR 97205-2621

Description: Intek C++ adds the following to C: type-checking, programming support, and operator loading. Its functions include the ability to compile larger programs, allow user to select preferred compiler, and enhance program compatibility.
Classification: Coding, Compiler, Syntax & Semantics Analyzer
Features:
Languages Supported: All, C, C++, FORTRAN
Configurations: QNX 4.0

Tool: InterCASE KnowledgeWare Gateway (IKG)

Version: 1.5 | Release Date: 1/01/91
Number Sold: 35+ | Single User Price: (Contact Vendor)
Report Date: 1/07/93 | Report Updated: 6/09/94
Training Available
Site License Available

Vendor: InterPort Software Corp.
POC: Steve Fitzgerald
Phone: 703-385-1515 Fax: 703-385-7429
E-mail:
Address: 5904 Wood Sorrel CT
Burke, VA 22015-2718

Description: The InterCASE Knowledgeware Gateway reverse engineers applications into Knowledgeware's Design Workstation Encyclopedia. It provides a baseline for redevelopment and accurate and complete system documentation.
Classification: Coding, Documentation, Configuration Management, Reengineering, Cross Referencing Tool, Retargeting, Reverse Engineering, Syntax & Semantics Analyzer
Features:
Languages Supported: CICS, COBOL, IMS
Configurations: PC/MS-DOS, PC/OS/2

Tool: J73 Automated Verification System (J73AVS)

Version: 4.1 | Release Date: 2/26/90
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 12/16/91 | Report Updated: 7/01/94
Training Available

Vendor: ASV/SCEL
POC: Michael G. Crawford
Phone: 805-964-7724 Fax: 805-967-7094
E-mail:
Address: 5383 Hollister Ave., PO Box 6770
Santa Barbara, CA 93160-6770

Description: The Automated Verification System for JOVIAL (J73AVS) provides static and dynamic evaluation, test coverage measurements, retesting assistance, and automated reports that are useful for debugging, documenting, and maintenance of software.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Reuse, Auditor, Code Change Monitor, Complexity Measurer, Coverage/Frequency Analyzer, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: JOVIAL
Configurations: VAX/UNIX, VAX/VMS

Tool: JCL/Convert

Version: – | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 5/10/93 | Report Updated: 6/07/94

Vendor: MB Solutions, Inc.
POC: Technical Support
Phone: 303-321-2205 Fax: –
E-mail:
Address: 1720 So. Bellaire St. Suite106
Denver, CO 80222-4308

Description: Automates analysis and design capture of JCL.
Classification: Design, Reengineering, Cross Referencing Tool, Reverse Engineering
Features:
Languages Supported: JCL
Configurations: MVS, IBM/MPS10

Tool: JCL/Cross-Reference
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated: 6/07/94

Vendor: MB Solutions, Inc.
POC: Technical Support
Phone: 303-321-2205 Fax: –
E-mail:
Address: 1720 So. Bellaire St. Suite106
Denver, CO 80222-4308

Description: Automatically produces reports displaying significant information on File, Program, Procedure, and Job relationships.
Classification: Coding, Testing, Cross Referencing Tool
Features:
Languages Supported: JCL
Configurations: MVS, IBM

Tool: JOVIAL Analysis and Conversion Kit (JACK)
Version: 3.3 Release Date: 11/01/93
Number Sold: 4 Single User Price: $18k
Report Date: 1/28/93 Report Updated: 7/01/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Personyx
POC: Clancey Maloney
Phone: 719-475-8781 Fax: –
E-mail:
Address: 314 E. San Rafael St.
Colorado Springs, CO 80903-2406

Description: JACK is a JOVIAL-to-Ada Reengineering toolset. It translates JOVIAL J3/4 and J73 to Ada and to C; provides McCabe/Halstead metrics, a global cross-reference generator, a calling hierarchy analyzer, and a teamwork interface.
Classification: Design, Coding, Documentation, Quality Assurance, Metrics, Reengineering, Reuse, Software Engineering Environment, Complexity Measurer, Cross Referencing Tool, Reusable Components Identifier, Reverse Engineering, Size Measurer, Source Code Translator
Features: SLOC Actuals
Languages Supported: JOVIAL
Configurations: PC/MS-DOS, Sun/Sun OS

Tool: JOVIAL IPSE (JIPSE)
Version: NZ-13 Release Date: 5/01/93
Number Sold: 25 Single User Price: (Contact Vendor)
Report Date: 6/26/93 Report Updated: 7/01/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Proprietary Software Systems, Inc.
POC: Richard Gilinsky
Phone: 310-394-5233 Fax: 310-393-3122
E-mail:
Address: 429 Santa Monica Blvd., Suite 430
Santa Monica, CA 90401

Description: JIPSE is a superset of the Integrated Tool Set (ITS). JIPSE consists of a Jovial compiler, assembler, linker, and source language interactive debugger.
Classification: Coding, Testing, Reengineering, Assembler, Compiler, Cross Referencing Tool, Debugger, Linker, Structure Checker
Features:
Languages Supported: JOVIAL
Configurations: PC, UNIX, VAX/VMS

Tool: JOVIAL Reverse Engineering Toolset (JRETS)
Version: Release Date: 2/01/93
Number Sold: – Single User Price: Free to DoD
Report Date: 3/08/93 Report Updated: 7/01/94
Training Available

Vendor: Software Technology Support Center
POC: John Balaban
Phone: 801-777-9731 Fax: 801-777-8069
E-mail: balabanj@hillwpos.hill.af.mil
Address: 00-ALC/TISEC, STSC, 7278 Fourthth St.
Hill AFB, UT 84056

Description: JRETS is used to capture design information from JOVIAL (J73) source code and display that information on CADRE's TEAMWORK case tool. The tool provides data flow diagrams, structure charts, control flowcharts, cyclomatic complexity, etc.
Classification: Coding, Reengineering, Complexity Measurer, Retargeting, Reverse Engineering, Structure Checker
Features:
Languages Supported: JOVIAL
Configurations: Sun/SPARC

Tool: JOVIAL Source Code Review and Metrics (J-SCRAM) **Vendor:** Software Engineering Assoc.

Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/07/93 Report Updated: 7/01/94

POC: Technical Support
Phone: 513-427-0091 Fax: 513-427-0093
E-mail:
Address: 2875 Presidential Dr., Suite 130
Fairborn, OH 45324-6267

Description: J-SCRAM is a JOVIAL documenter of source code design and implementation. The analysis performed is based entirely upon the source code.
Classification: Coding, Documentation, Metrics, Reengineering, Complexity Measurer, Size Measurer, Syntax & Semantics Analyzer
Features: SLOC Actuals
Languages Supported: JOVIAL
Configurations: Sun/Sun OS

Tool: JOVIAL System Documentor (JSD) **Vendor:** Software Engineering Assoc.

Version: 13.0 Release Date: 1/01/92
Number Sold: 20 Single User Price: $5,000
Report Date: 1/26/93 Report Updated: 5/24/94
Training Available
Evaluation Copy Available Site License Available

POC: Dick Peterson
Phone: 513-427-0091 Fax: 513-427-0093
E-mail:
Address: 2875 Presidential Dr., Suite 130
Fairborn, OH 45324-6267

Description: The JOVIAL System Documenter is a static analyzer that provides variable usage diagnostics (set/used), call trees and Cross Referencing Tools.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Cross Referencing Tool, Redocumenter, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: JOVIAL
Configurations: VAX/VMS, IBM/MVS, Intel UNIX

Tool: Legacy Workbench **Vendor:** KnowledgeWare, Inc.

Version: 5.0 Release Date:
Number Sold: 300 Single User Price: (Contact Vendor)
Report Date: 12/23/93 Report Updated: 7/01/94
Training Available
Site License Available

POC: Federal Systems Division
Phone: 703-506-0800 Fax: 703-506-0154
E-mail:
Address: 1650 Tysons Blvd., Suite 800
McLean, VA 22102

Description: The Legacy Workbench contains four tools for maintaining legacy systems. Tools in the workbench include Application Assessment, Program Documentation, Program Restructuring, and Graphical Maintenance.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Reuse, Complexity Measurer, Cross Referencing Tool, Defect/Change Tracker, Redocumenter, Reliability Analyzer, Restructurer, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: COBOL
Configurations: MVS, OS/2

Tool: lint **Vendor:** Digital Equipment Corp.

Version: 1.38 Release Date: 10/01/93
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/23/92 Report Updated: 7/05/94

POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: lint detects C code features that are likely to develop into bugs, produce nonportable code, or produce inefficient code. lint also performs a more complete type check than the C compiler. lint detects unreachable code and loop errors.
Classification: Coding, Quality Assurance, Reengineering, Auditor, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: lint-PLUS
Vendor: Information Processing Techniques Corp.

Version:	3.81	Release Date:	12/15/91	POC:	Ron Charters		
Number Sold:	500+	Single User Price:	$3,900	Phone:	415-494-2758	Fax:	415-494-2758
Report Date:	1/26/93	Report Updated:	5/16/94	E-mail:			
Training Available				Address:	2 Brookside Lane		
Evaluation Copy Available		Site License Available			Mansfield Center, CT 06250		

Description: lint-PLUS is a lint utility that provides static code analysis of C code. lint-PLUS provides information on type checking, function parameter checking, and conformance to standards. It also allows the user to vary the amount of metrics reported.
Classification: Coding, Quality Assurance, Metrics, Reengineering, Auditor, Complexity Measurer, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: DG Eclipse/AOS/VS, DG Nova/AOS/VS, VAX/VMS

Tool: Lisp Object-Oriented Programming System (LOOPS)
Vendor: Venue

Version:	2.0	Release Date:	8/01/91	POC:	Chris West		
Number Sold:	150	Single User Price:	(Contact Vendor)	Phone:	415-508-9672	Fax:	415-508-9770
Report Date:	12/30/92	Report Updated:	7/05/94	E-mail:	Sales.Mv@envos.xerox.com		
				Address:	1549 Industrial Road		
					San Carlos, CA 94070		

Description: LOOPS is an extension to Medley. It supports message passing and multiple inheritance. It has a library of graphical objects to save your time when you build graphics applications.
Classification: Design, Coding, Testing, Reengineering, Software Engineering Environment, X AI, Compiler, Cross Referencing Tool, Debugger, Expert System Shell, Rule-Based Shell, Status Displayer, Structure Checker
Features:
Languages Supported: LISP
Configurations: Opus, 386/486 PC workstation, Sun Sparc, PC/MS-DOS, Alpha OSF

Tool: LoadRunner
Vendor: Mercury Interactive Corp.

Version:	1.1	Release Date:	11/15/93	POC:	Stephanie Froude		
Number Sold:	10	Single User Price:	(Contact Vendor)	Phone:	408-982-0100	Fax:	408-982-0149
Report Date:		Report Updated:	7/05/94	E-mail:	steph@merc-int.com		
Training Available				Address:	3333 Octavius Dr. Suite 104		
Evaluation Copy Available		Site License Available			Santa Clara, CA 95054		

Description: LoadRunner provides multiuser system testing in addition to application testing for client/server software. System testing with LoadRunner helps eliminate the uncertainties of application performance under load by simplifying creation and analysis.
Classification: Testing, Quality Assurance, Reuse, Capture-Replay Tool, Data Reducer & Analyzer, Network Simulator, Performance/Timing Analyzer, Test Data Generator, Test Execution Manager
Features: GUI-based Testing
Languages Supported: --
Configurations: Sun OS, UNIX

Tool: Logiscope
Vendor: Verilog, Inc.

Version:	3.0	Release Date:	1/01/90	POC:	Wes Hair		
Number Sold:	2,000+	Single User Price:	$18,500	Phone:	800-424-3095	Fax:	214-241-6594
Report Date:	12/30/92	Report Updated:	7/05/94	E-mail:			
Training Available				Address:	3010 LBJ Freeway, Suite 900		
Evaluation Copy Available					Dallas, TX 75234		

Description: Logiscope is an automated source code analyzer that provides complexity analysis and a dynamic analyzer that provide test coverage analysis. Logiscope calculates over 30 different metrics and supports over 35 languages on a variety of platforms. It does graphic test coverage analysis.
Classification: Coding, Requirements Analysis, Testing, Documentation, Quality Assurance, Metrics, Reengineering, Reuse, Auditor, Complexity Measurer, Coverage/Frequency Analyzer, Restructurer, Reverse Engineering, Size Measurer, Structure Checker
Features: SLOC Actual
Languages Supported: Ada, Assembler, Atlas, C, C++, CMS, COBOL, FORTRAN, Modula-2, Pascal, PDL, PL/1, PL/M
Configurations: UNIX, Apollo/Aegis, HP-9000/HP-UX, IBM/CMS, IBM/MVS, IBM/MVS/XA, IBM/VM, MicroVAX/MicroVMS, RISC 6000, Sun/Sun OS, VAX/ULTRIX, VAX/VMS

Tool: Logiscope Graphical Editor
Version: | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 8/30/91 | Report Updated: 6/07/94

Vendor: Verilog, Inc.
POC: Technical Support
Phone: 800-424-3095 Fax: 214-241-6594
E-mail:
Address: 3010 LBJ Freeway, Suite 900
Dallas, TX 75234

Description: Increases the ability to analyze and expose information regarding the structure and behavior of an application.
Classification: Coding, Reengineering, Language Sensitive Editor, Reverse Engineering, Structure Checker
Features:
Languages Supported:
Configurations: Apollo, IBM, Sun/Sun OS, UNIX, VAX/VMS

Tool: LOOKAT
Version: – | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 12/23/92 | Report Updated:

Vendor: EDP Management, Inc.
POC: Technical Support
Phone: 619-462-5400 Fax: 619-462-0418
E-mail:
Address: 5465 Lake Murray Blvd.
La Mesa, CA 92107

Description: LOOKAT compares two files that may be on different media.
Classification: Testing, Comparator
Features:
Languages Supported: All
Configurations: B2000/MCP, B4900/MCP

Tool: MALPAS
Version: 6.0 | Release Date: 5/01/93
Number Sold: 90 | Single User Price: $45,000
Report Date: 1/27/93 | Report Updated: 7/05/94
Training Available | Newsletter Available
Evaluation Copy Available

Vendor: TA Consultancy Services Ltd.
POC: Richard Coope
Phone: 44-252-711414 Fax: 44-252-735633
E-mail:
Address: Newnhams West Street
Farnham, Surrey, GU9 7TB UK

Description: MALPAS' analyses subject complex software. The analysis reveals the detailed properties of the software and is used to identify short comings in quality, inconsistencies with the specification and programming errors.
Classification: Requirements Analysis, Quality Assurance, Complexity Measurer, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada, ASM, C, CORAL 86, Pascal
Configurations: VAX/VMS

Tool: MAX Macro Assembler (MAX)
Version: 1.30 | Release Date: 3/01/90
Number Sold: 500 | Single User Price: $595
Report Date: 1/06/93 | Report Updated: 7/05/94
Site License Available

Vendor: Computer Innovations, Inc.
POC: Barbara Eberhardt
Phone: 908-542-5920 Fax: 908-542-6121
E-mail:
Address: 1129 Broad Street
Shrewsbury, NJ 07702-4314

Description: MAX provides 8088 through 80486 instructions, 80x87 co-processor and emulator, syntax and macro language similar to other 80x86 assemblers, source level debugging support, supplied macros defining function entry and exit sequences, and construct checks.
Classification: Coding, Testing, Assembler, Debugger, Emulator, Syntax & Semantics Analyzer
Features: Real Time
Languages Supported: Assembler, C, C++
Configurations: Lynex, Dell, Esix, Venix, Microport, Wyse,NCR, QNX, Sequent, SCO

Tool: McCabe Instrumentation Tool
Vendor: McCabe & Assoc., Inc.

Version:	4.01	Release Date:	8/31/93	POC:	Tom McCabe		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-634-0150	Fax:	410-995-1528
Report Date:	12/28/92	Report Updated:	7/05/94	E-mail:			
Training Available		Newsletter Available		Address:	5501 Twin Knolls Rd., Suite 111		
Evaluation Copy Available		Site License Available			Columbia, MD 21045		

Description: McCabe Instrumentation Tool is a dynamic testing tool that determines code coverage and generates untested paths and untested subtrees. It monitors the execution of code, generating all remaining unit-level and integration tests needed to fully test the system.
Classification: Coding, Testing, Reengineering, Coverage/Frequency Analyzer, Cross Referencing Tool, Status Displayer, Structure Checker, Test Data Generator
Features:
Languages Supported: All
Configurations: UNIX, PC/MS-DOS, HP/SOFTBENCH, IBM WORKBENCH, Motif, Openlook

Tool: McCabe Slice Tool
Vendor: McCabe & Assoc., Inc.

Version:	4.01	Release Date:	8/31/93	POC:	Tom McCabe		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-634-0150	Fax:	410-995-1528
Report Date:	12/28/92	Report Updated:	7/05/94	E-mail:			
Training Available		Newsletter Available		Address:	5501 Twin Knolls Rd., Suite 111		
Evaluation Copy Available		Site License Available			Columbia, MD 21045		

Description: The McCabe Slice Tool helps developers/maintainers visualize the software architecture. It helps uncover software design bugs; it helps with Reengineering systems, particularly identifying straightforward decompositions. It is used for debugging, downsizing, requirements traceability and identifying redundant and reusable code.
Classification: Requirements Trace, Design, Coding, Testing, Reengineering, Debugger, Reusable Components Identifier, Structure Checker
Features:
Languages Supported: Ada, C, COBOL, FORTRAN
Configurations: UNIX, Apollo, DEC/ULTRIX, HP, IBM/AIX, PC/MS-DOS, SGraphics, Sun/Sun OS, VAX/VMS

Tool: Medley Development Environment (Medley)
Vendor: Venue

Version:	2.0	Release Date:	8/01/91	POC:	Chris West		
Number Sold:	200	Single User Price:	$2,499-$7,995	Phone:	415-508-9672	Fax:	415-508-9770
Report Date:	12/30/92	Report Updated:	5/26/94	E-mail:	Sales.Mv@envos.xerox.com		
				Address:	1549 Industrial Road		
Evaluation Copy Available		Site License Available			San Carlos, CA 94070		

Description: Medley has a debugger that pops up when you hit errors. Supports Interlisp and CLOS.
Classification: Design, Coding, Testing, Documentation, Reengineering, Software Engineering Environment, X AI, Compiler, Cross Referencing Tool, Debugger, Expert System Shell, Structure Checker
Features:
Languages Supported: LISP
Configurations: PC/MS-DOS, Sun/SPARC

Tool: Metrics Analysis and Reporting System (MARS)
Vendor: Computer Power Group, Inc.

Version:	2.02	Release Date:	6/01/91	POC:	Tech. Support (CPGI)		
Number Sold:	30	Single User Price:	$20,000	Phone:	602-956-7575	Fax:	602-957-8254
Report Date:	12/22/92	Report Updated:	7/05/94	E-mail:			
Training Available				Address:	5110 N. 40th St.		
		Site License Available			Phoenix, AZ 85018		

Description: MARS performs productivity and quality measurement of the system development process. It collects and stores several hundred measures and attributes about systems in development and production, calculating metrics from these.
Classification: Quality Assurance, Metrics, Complexity Measurer, Defect/Change Tracker, Size Measurer
Features: SLOC Estimates
Languages Supported: --
Configurations: MS-DOS v3.0+

Tool: Metrics Generator (METRC)

Version: 6 | Release Date: 10/28/93
Number Sold: 6 | Single User Price: $25,000
Report Date: 3/02/93 | Report Updated: 7/05/94
Training Available
Evaluation Copy Available

Vendor: NCCOSC

POC: Bryan Riegle
Phone: 619-553-9446 | Fax: 619-553-9483
E-mail: riegle@maple.nosc.mil
Address: NRaD, Code 884/RIEGLE
San Diego, CA 92152

Description: Metrics Generator generates calltree reports, complexity metrics reports, and statistical reports from CMS Source Code.
Classification: Design, Coding, Configuration Management, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Size Measurer, Structure Checker, Test Data Generator
Features: SLOC Actuals
Languages Supported: CMS-2
Configurations: PC/MS-DOS, Sun/UNIX, VAX/VMS

Tool: Metrics Manager (M M)

Version: – | Release Date:
Number Sold: – | Single User Price: $14950
Report Date: 3/01/93 | Report Updated: 7/05/94

Vendor: Applied Business Technology

POC: Technical Support
Phone: 800-477-6532 | Fax: 212-219-3597
E-mail:
Address: 361 Broadway
New York, NY 10013

Description: M M provides data collection, analysis, and comparison reporting for IS projects. This also is a robust measurement tool that measures definition, construction and operations data, and delivers quality, performance, and value metrics information.
Classification: Project Management, Quality Assurance, Metrics, Data Reducer & Analyzer, Size Measurer
Features: Function Points
Languages Supported: SQL
Configurations: PC/MS-DOS

Tool: Metrics4C

Version: 2.1 | Release Date: 1/04/93
Number Sold: – | Single User Price: $425
Report Date: 8/24/93 | Report Updated: 7/05/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: +1 Software Engineering

POC: John P. Dempsey
Phone: 805-389-1778 | Fax: 805-389-1778
E-mail:
Address: 2510-G Las Posas Rd., Suite 438
Camarillo, CA 93011

Description: Metrics4C calculate software metrics such as LOC, cyclomatic complexity, and Integration Test Percentage for an individual module or for the entire project. Runs interactively or in the background on a daily, weekly, or monthly basis.
Classification: Coding, Testing, Metrics, Reengineering, Complexity Measurer, Size Measurer, Test Execution Manager
Features: Automatic Data Collection, SLOC Actuals
Languages Supported: C
Configurations: SPARC, Sun

Tool: Metrics4Fortran

Version: 2.1 | Release Date: 1/04/93
Number Sold: – | Single User Price: $425
Report Date: 8/24/93 | Report Updated: 7/05/94
Training Available | Newsletter Available
Site License Available

Vendor: +1 Software Engineering

POC: John P. Dempsey
Phone: 805-389-1778 | Fax: 805-389-1778
E-mail:
Address: 2510-G Las Posas Rd., Suite 438
Camarillo, CA 93011

Description: Metrics4Fortran calculates software metrics such as LOC, cyclomatic complexity, and Integration Test Percentage for an individual module or for the entire project. It runs interactively or in the background on a daily, weekly, or monthly basis.
Classification: Coding, Testing, Metrics, Reengineering, Complexity Measurer, Size Measurer, Test Execution Manager
Features: Automatic Data Collection, SLOC Actuals
Languages Supported: FORTRAN
Configurations: SPARC, Sun

Tool: Metrics4Pascal
Vendor: +1 Software Engineering

Version:	2.1	Release Date:	1/04/93	POC:	John P. Dempsey		
Number Sold:	--	Single User Price:	$425.00	Phone:	805-389-1778	Fax:	805-389-1778
Report Date:	8/24/93	Report Updated:	7/05/94	E-mail:			
Training Available		Newsletter Available		Address:	2510-G Las Posas Rd., Suite 438		
		Site License Available			Camarillo, CA 93011		

Description: Metrics4Pascal calculate software metrics, such as LOC, cyclomatic complexity, and Integration Test Percentage for individual modules or for the entire project. It run interactively or in background on a daily, weekly, or monthly basis.
Classification: Coding, Testing, Metrics, Reengineering, Complexity Measurer, Size Measurer
Features: Automatic Data Collection, SLOC Actuals
Languages Supported: Pascal
Configurations: SPARC, Sun

Tool: Metrics4Project
Vendor: +1 Software Engineering

Version:	2.1	Release Date:		POC:	John P. Dempsey		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	805-389-1778	Fax:	805-389-1778
Report Date:	10/12/93	Report Updated:	5/16/94	E-mail:			
Training Available		Newsletter Available		Address:	2510-G Las Posas Rd., Suite 438		
Evaluation Copy Available		Site License Available			Camarillo, CA 93011		

Description: Displays the number of open, closed, and total number of problem reports organized by status, priority, category, and longevity. This product runs interactively or in the background on a daily, weekly, or monthly basis.
Classification: Project Management, Quality Assurance, Metrics, Defect/Change Tracker
Features:
Languages Supported: --
Configurations: Sun 3, Sun 4, Sparc

Tool: Micro Focus COBOL/2 for UNIX
Vendor: Micro Focus, Inc.

Version:	--	Release Date:		POC:	Guy J. Spaniak		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	415-856-4161	Fax:	415-856-6134
Report Date:	12/28/92	Report Updated:	7/05/94	E-mail:			
				Address:	2465 E. Bayshore Rd., Suite 400		
					Palo Alto, CA 94303		

Description: COBOL/2 for UNIX is a mainframe-level COBOL compiler that allows applications to take full advantage of 32-bit UNIX architectures, including RISC microprocessors.
Classification: Coding, Testing, Quality Assurance, X OS Utilities, Compiler, Coverage/Frequency Analyzer, Debugger, Performance/Timing Analyzer
Features:
Languages Supported: COBOL II
Configurations: UNIX

Tool: Micro Focus Cobol/2 Workbench
Vendor: Micro Focus, Inc.

Version:	--	Release Date:		POC:	Guy J. Spaniak		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	415-856-4161	Fax:	415-856-6134
Report Date:	12/28/92	Report Updated:	7/05/94	E-mail:			
				Address:	2465 E. Bayshore Rd., Suite 400		
					Palo Alto, CA 94303		

Description: Micro Focus Cobol/2 Workbench is a complete COBOL application development system for the PC. The mainframe compatibility of the compiler offers a PC development system and can off-load mainframe program development to intelligent programmer workstation.
Classification: Coding, Testing, Quality Assurance, Reengineering, Database, Capture-Replay Tool, Coverage/Frequency Analyzer, Debugger, Forward Engineering, Screen Painter, Structure Checker, Test Execution Manager
Features:
Languages Supported: COBOL II
Configurations: PC/OS/2, PC/Window 3.0

Tool: **Micro Focus Toolbox for UNIX**
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 12/28/92 Report Updated: 6/02/94

Vendor: **Micro Focus, Inc.**
POC: Guy J. Spaniak
Phone: 415-856-4161 Fax: 415-856-6134
E-mail:
Address: 2465 E. Bayshore Rd., Suite 400
Palo Alto, CA 94303

Description: Toolbox for UNIX is a powerful set of utilities designed to bring increased productivity to the UNIX/COBOL development environment.
Classification: Design, Coding, Testing, Quality Assurance, Reengineering, Capture-Replay Tool, Coverage/Frequency Analyzer, Debugger, Language Sensitive Editor, Performance/Timing Analyzer, Screen Painter, Structure Checker
Features:
Languages Supported: COBOL II
Configurations: UNIX

Tool: **Micro Focus Workbench**
Version: 3.0 Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 11/22/91 Report Updated: 7/05/94

Vendor: **Micro Focus, Inc.**
POC: Technical Support
Phone: 415-856-4161 Fax: 415-856-6134
E-mail:
Address: 2465 E. Bayshore Rd., Suite 400
Palo Alto, CA 94303

Description: Micro Focus Workbench provides advanced visual productivity tools, program debugging and construction, program analysis, and navigation. It also has a file maintenance, conversion, and transfer.
Classification: System Simulation, Design, Coding, Testing, Quality Assurance, Reengineering, Database, Software Engineering Environment, Capture-Replay Tool, Coverage/Frequency Analyzer, Data Extractor, Debugger, Language Sensitive Editor, Performance/Timing Analyzer, Screen Painter, Test Execution Manager
Features:
Languages Supported: COBOL II
Configurations: PC

Tool: **Microsoft Source Profiler**
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 8/05/93 Report Updated: 7/05/94

Vendor: **Microsoft Corp.**
POC: Tech. Support (MiCo)
Phone: 800-426-9400 Fax: 617-740-0025
E-mail:
Address: 1 Microsoft Way
Redmond, WA 98052-6399

Description: Microsoft Source Profiler generates statistical profile information for DOS, OS/2, and Windows-based programs.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: OS/2, PC/MS-DOS

Tool: **Microsoft Test**
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 3/01/93 Report Updated: 7/05/94

Vendor: **Microsoft Corp.**
POC: Tech. Support (MiCo)
Phone: 800-426-9400 Fax: 617-740-0025
E-mail:
Address: 1 Microsoft Way
Redmond, WA 98052-6399

Description: Microsoft Test is an automated testing tool used to validate the quality of Microsoft Window applications. It can test any Windows application.
Classification: Testing, Capture-Replay Tool, Comparator
Features:
Languages Supported: --
Configurations: PC/Window 3.0

Tool: MicroSTEP
Version: 1.6 | Release Date: 3/01/92
Number Sold: – | Single User Price: $895
Report Date: 1/26/93 | Report Updated: 7/05/94

Vendor: SYSCORP Intl.
POC: Holly Nash
Phone: 800-727-7837 | Fax: 512-338-5810
E-mail:
Address: 9430 Research Blvd., Echelon IV,Suite 300
Austin, TX 78759

Description: MicroSTEP is a "visual programming" application. A supports design validation and quality domain documentation.
Classification: Design, Requirements Analysis, Reengineering, Defect/Change Tracker, Forward Engineering, Run-Time Error Checker
Features:
Languages Supported: C
Configurations: PC/MS-DOS

Tool: Microtec Cross Development Tools
Version: 4.2 | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 12/28/92 | Report Updated: 6/02/94
Training Available | Newsletter Available
Evaluation Copy Available

Vendor: Microtec Research, Inc.
POC: Jeff Shimbo
Phone: 800-950-5554 | Fax: 408-982-8266
E-mail:
Address: 2350 Mission College Blvd.
Santa Clara, CA 95054

Description: The Microtec Research Cross Development Tools form an advanced software development toolkit. The toolkit provides numerous features that are required for developing high-performance embedded applications.
Classification: Coding, Testing, Quality Assurance, Reengineering, Assembler, Compiler, Coverage/Frequency Analyzer, Cross Assembler, Debugger, Emulator, Linker, Performance/Timing Analyzer, Simulator, Structure Checker
Features:
Languages Supported: Assembler, C, C++
Configurations: PC/MS-DOS, Sun/SPARC

Tool: MICS MVS Performance Manager
Version: – | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 12/29/92 | Report Updated: 7/05/94

Vendor: Legent Corp.
POC: Steven King
Phone: 800-726-1637 | Fax: 508-836-5992
E-mail:
Address: 575 Herndon Parkway
Herndon, VA 22070

Description: MICS MVS Performance Manager furnishes facilities for MVS system tuning, batch workload analysis, and I/O configuration analysis functions. It classifies workloads and identifies bottlenecks as well as providing reporting capabilities.
Classification: Testing, Quality Assurance, X OS Utility, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: MVS

Tool: Monitor/Plus
Version: 2.0 | Release Date: 6/15/92
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 12/23/92 | Report Updated: 7/05/94

Vendor: Data Center Software
POC: Dave Powers
Phone: 800-726-1637 | Fax: 508-836-5992
E-mail:
Address: 575 Herndon Parkway
Herndon, VA 22070

Description: MONITOR/Plus helps to track key usage and performance statistics, taking specified action on your behalf when a problem condition arises. Allows customized messages and automated personnel notification.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: VAX/VMS

Tool: MULTI
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 3/03/93 Report Updated: 7/05/94

Vendor: Oasys, Inc.
POC: Technical Support
Phone: 617-890-7889 Fax: 617-862-2427
E-mail:
Address: 1 Cranberry Hill
Lexington, MA 02173

Description: MULTI is a window-based source-level program development environment. It supports programming in C, C++, FORTRAN, Pascal, Ada and assembly language.
Classification: Coding, Testing, Debugger, Language Sensitive Editor, Structure Checker, Text Editor
Features:
Languages Supported: Ada, Assembler, C, C++, FORTRAN, Pascal
Configurations: DECstation, PC/Windows, SGraphics, Sun/Sun OS, UNIX, VAX/ULTRIX

Tool: Navigator
Version: 1.0 Release Date: 8/01/92
Number Sold: – Single User Price: $6,000-$16,000
Report Date: 1/26/93 Report Updated: 7/05/94
Training Available
Evaluation Copy Available Site License Available

Vendor: A+ Software, Inc.
POC: Technical Support
Phone: 315-685-6918 Fax: 315-685-6076
E-mail:
Address: 16 Academy St.
Skaneateles, NY 13152

Description: Navigator provides CASE documentation for reengineered, newly developed, or traditional systems in maintenance. Navigator is an ISPF menu driven, integrated set of interactive and batch productivity tools that enhance the support and management of business application software.
Classification: Coding, Documentation, Configuration Management, Quality Assurance, Reengineering, Cross Referencing Tool, Redocumenter, Reverse Engineering
Features:
Languages Supported: Assembler, JCL, VTOC
Configurations: IBM

Tool: NET-Check
Version: 1.11 Release Date:
Number Sold: – Single User Price: $499
Report Date: 12/28/92 Report Updated: 6/02/94

Vendor: Nu-Mega Technologies
POC: Scott Gagnone
Phone: 603-889-2386 Fax: 603-889-1135
E-mail:
Address: PO Box 7780
Nashua, NH 03060-7607

Description: NET-Check provides memory protection and performance monitoring to any NetWare 386 server. It prevents server crashes due to memory overwrites caused by misbehaved NLMs on the Netware 3.x server.
Classification: Coding, Testing, Configuration Management, Quality Assurance, Debugger, Network Analyzer, Run-Time Error Checker
Features:
Languages Supported: --
Configurations: PC/MS-DOS

Tool: NightTrace
Version: 1.2 Release Date: 2/01/93
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 8/03/93 Report Updated: 10/20/93
Training Available

Vendor: Texas Instruments
POC: Michelle Rosemin
Phone: 305-974-1700 (x5584) Fax: 305-977-5580
E-mail:
Address: 2101 W. Cypress Creek Rd.
Fort Lauderdale, FL 33309-1892

Description: NightTrace is a graphical tool set for analyzing the dynamic behavior of multiprocessor application. It is tailored to the complex needs of real-time developers.
Classification: Design, Coding, Testing, Software Engineering Environment, Debugger, Performance/Timing Analyzer
Features:
Languages Supported: C, FORTRAN
Configurations: Harris/UX

Tool: NLM-Check
Version: – Release Date:
Number Sold: – Single User Price: $499
Report Date: 12/28/92 Report Updated: 7/05/94

Vendor: Nu-Mega Technologies
POC: Scott Gagnone
Phone: 603-889-2386 Fax: 603-889-1135
E-mail:
Address: PO Box 7780
Nashua, NH 03060-7607

Description: NLM-Check is a bounds checker for NLM programmers. It tests NLMs under development for memory address accesses that belongs to other NLMs.
Classification: Coding, Testing, Quality Assurance, Debugger, Network Analyzer, Run-Time Error Checker
Features:
Languages Supported: –
Configurations: PC/MS-DOS

Tool: ObjectCenter
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/27/93 Report Updated: 7/05/94

Vendor: CenterLine Software, Inc.
POC: Dick Burgett
Phone: 703-749-1100 Fax: 703-749-1108
E-mail: burgett@centerline.com
Address: 7926 Jones Branch Dr., Suite 1000
McLean, VA 22102

Description: ObjectCenter is a UNIX programming environment for writing, understanding, and maintaining C++ programs. It is designed to support development teams and software engineers throughout the product lifecycle. It translates from C to C++
Classification: Coding, Testing, Reengineering, Software Engineering Environment, Compiler, Cross Referencing Tool, Debugger, Linker, Source Code Translator, Structure Checker
Features:
Languages Supported: C, C++
Configurations: HP, IBM, Sun, UNIX

Tool: Objective-C
Version: 2.0 Release Date: 8/14/92
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 3/15/93 Report Updated: 7/05/94

Vendor: Stepstone Corp.
POC: Technical Support
Phone: 203-426-1875 Fax: 203-270-0106
E-mail:
Address: 75 Glen Rd.
Sandy Hook, CT 06482

Description: Objective-C lets the user program in a new way within a familiar language. It allows the user to build on the investment in existing C code, and modules written in Objective-C can be easily reused in future applications.
Classification: Design, Coding, Testing, Code Generator, Compiler, Cross Referencing Tool, Debugger, Reusable Components Identifier, Structure Checker
Features:
Languages Supported: C, C++
Configurations: AIX, DEC/ULTRIX, HP, IBM, PC/MS-DOS, Sun, UNIX, VAX/VMS

Tool: Online Session Capture and Replay (OSCAR)
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 3/15/93 Report Updated: 7/05/94

Vendor: Unisys
POC: Technical Support
Phone: 313-972-7000 Fax: –
E-mail:
Address: 1 Unisys Place, P.O. Box 418
Detroit, MI 48232

Description: OSCAR is used to capture and replay UTS host/terminal sessions for product development, regression testing, problem documentation, and automation of repetitive transaction input.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Defect/Change Tracker
Features:
Languages Supported: --
Configurations: PC, UNIX

Tool: Open ACCLIM8
Version: 1.30 Release Date: 7/01/92
Number Sold: 100+ Single User Price: $3,988+
Report Date: 1/26/93 Report Updated: 7/05/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Accelr8 Technology Corp.
POC: Tech. Support (ATC)
Phone: 703-749-1100 Fax: 703-749-1108
E-mail: burgett@centerline.com
Address: 7926 Jones Branch Dr., Suite 1000
McLean, VA 22102

Description: Automated FORTRAN porting tool for moving VAX/VMS FORTRAN applications onto UNIX systems. Its purpose is to reduce time and cost of moving FORTRAN applications.
Classification: Coding, Testing, Reengineering, Reuse, Software Engineering Environment, Compiler, Debugger, Retargeting, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: Solaris2.1, DECstation, Harris, HP, IBM, Sequent, Sun/VMS

Tool: PACREVERSE
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 4/09/93 Report Updated: 7/05/94

Vendor: CGI Systems, Inc.
POC: Dick Ramsdell
Phone: 800-722-1866 Fax: 914-735-2231
E-mail:
Address: One Blue Hill Plaza, PO Box 1645
Pearl River, NY 10965

Description: PACREVERSE is aimed at the PACBASE application development system to reverse engineer code.
Classification: Coding, Reengineering, Cross Referencing Tool, Reverse Engineering, Structure Checker
Features:
Languages Supported: COBOL
Configurations: PC/MS-DOS

Tool: Panorama C
Version: 2.0 Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 9/16/93 Report Updated: 7/05/94
Evaluation Copy Available Site License Available

Vendor: International Software Automation, Inc.
POC: Kevin ZHU
Phone: 510-494-8888 Fax: 510-494-1888
E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: Panorama C is an integrated software testing, quality assurance, and Reengineering toolkit for the C language. It provides cyclomatic complexity analysis, generates structure chart, and J-Flow Diagrams.
Classification: Coding, Testing, Documentation, Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Complexity Measurer, Coverage/Frequency Analyzer, Cross Referencing Tool, Size Measurer, Structure Checker, Syntax & Semantics Analyzer
Features: SLOC Actuals
Languages Supported: C
Configurations: PC/Window 3.0

Tool: Panorama C++
Version: 2.0 Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 8/23/93 Report Updated: 7/05/94
Evaluation Copy Available Site License Available

Vendor: International Software Automation, Inc.
POC: Kevin ZHU
Phone: 510-494-8888 Fax: 510-494-1888
E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: Panorama C++ is a fully integrated software design, coding, algorithm and logic debugging, testing, quality assurance, maintenance, and Reengineering workbench. It consists of five tools: OO-Test, OO-SQA, OO-Browser, OO-Diagrammer and OO-Analyzer.
Classification: Design, Coding, Testing, Documentation, Project Management, Quality Assurance, Metrics, Reengineering, Reuse, Database, Software Engineering Environment, Complexity Measurer, Coverage/Frequency Analyzer, Cross Referencing Tool, Data Reengineering, Debugger, Forward Engineering, Performance/Timing Analyzer, Redocumenter, Reverse Engineering, Size Measurer, Structure Checker, Syntax & Semantics Analyzer
Features: SLOC Actuals
Languages Supported: C++
Configurations: HP, IBM, Sun/Sun OS

Tool: Panorama C++/OO-Analyzer
Version: 2.0 Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/27/93 Report Updated: 7/05/94
Evaluation Copy Available Site License Available

Vendor: International Software Automation, Inc.
POC: Kevin ZHU
Phone: 510-494-8888 Fax: 510-494-1888
E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: Panorama C++/OO-Analyzer is a stand-alone software analysis toolkit. It has also been integrated into the Panorama C++ software engineering environment. It generates more than 100 Reengineering reports based on static analysis.
Classification: Coding, Documentation, Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Auditor, Complexity Measurer, Cross Referencing Tool, Language Sensitive Editor, Redocumenter, Reverse Engineering, Syntax & Semantics Analyzer
Features:
Languages Supported: C++
Configurations: Sun/Sun OS

Tool: Panorama C++/OO-Browser
Version: 2.0 Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/27/93 Report Updated: 7/05/94
Evaluation Copy Available Site License Available

Vendor: International Software Automation, Inc.
POC: Kevin ZHU
Phone: 510-494-8888 Fax: 510-494-1888
E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: Panorama C++/OO-Browser is a stand alone toolkit. It has also been integrated into Panorama C++ software engineering environment.
Classification: Design, Coding, Documentation, Project Management, Reengineering, Reuse, Complexity Measurer, Cross Referencing Tool, Forward Engineering, Redocumenter, Restructurer, Reverse Engineering, Structure Checker
Features:
Languages Supported: C++
Configurations: Sun/Sun OS

Tool: Panorama C++/OO-Diagrammer
Version: 2.O Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/27/93 Report Updated: 7/05/94
Evaluation Copy Available Site License Available

Vendor: International Software Automation, Inc.
POC: Kevin ZHU
Phone: 510-494-8888 Fax: 510-494-1888
E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: Panorama C++/OO-Diagrammer is a stand-alone program understanding and inspection toolkit. It has also been integrated into Panorama C++ software engineering environment.
Classification: Coding, Testing, Reengineering, Complexity Measurer, Redocumenter, Reverse Engineering, Status Displayer, Structure Checker
Features: Class structure diagramming
Languages Supported: C++
Configurations: Sun/Sun OS

Tool: Panorama C++/OO-SQA
Version: 2.0 Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/27/93 Report Updated: 7/05/94
Evaluation Copy Available Site License Available

Vendor: International Software Automation, Inc.
POC: Kevin ZHU
Phone: 510-494-8888 Fax: 510-494-1888
E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: Panorama C++/OO-SQA is a stand-alone object-oriented software quality assurance toolkit. It has also been integrated into Panorama C++ software engineering environment.
Classification: Coding, Quality Assurance, Reengineering, Auditor, Complexity Measurer, Maintainability Analyzer, Reformatter, Reverse Engineering
Features:
Languages Supported: C++
Configurations: Sun/Sun OS

Tool: Panorama C++/OO-Test
Version: 2.0 Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/27/93 Report Updated: 7/05/94
Evaluation Copy Available Site License Available

Vendor: International Software Automation, Inc.
POC: Kevin ZHU
Phone: 510-494-8888 Fax: 510-494-1888
E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: Panorama C++/OO-Test is a makefile-driven stand-alone test toolkit. It has also been integrated into Panorama C++ software engineering environment.
Classification: Testing, Coverage/Frequency Analyzer, Data Reducer & Analyzer, Status Displayer, Test Instrumenter
Features:
Languages Supported: C++
Configurations: Sun/Sun OS

Tool: Pascal+
Version: Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/21/93 Report Updated: 7/05/94

Vendor: Stony Brook Software
POC: Tech. Support (SBSo)
Phone: 805-496-5837 Fax: 805-496-7429
E-mail:
Address: 187 E. Wilbur Rd., Suite 4
Thousand Oaks, CA 91360

Description: Pascal+ is a development system. It includes, project-based IDE, optimizing compiler, smart linker, source debugger, integrated execution profiler and Runtime library.
Classification: Coding, Compiler, Debugger, Linker, Optimizer, Performance/Timing Analyzer, Run-Time Error Checker
Features:
Languages Supported: Pascal
Configurations: PC/MS-DOS

Tool: Pascal-2 Development System
Version: 2.4.0 Release Date: 4/01/92
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 3/15/93 Report Updated: 7/05/94

Vendor: Taumetric Corp.
POC: Sue M. Lindsey
Phone: 619-697-7674 Fax: 619-697-1104
E-mail: sue@taumet.com
Address: 8765 Fletcher Parkway, Suite 301
La Mesa, CA 91942

Description: Pascal-2 is a software system that includes a native-code compiler, a source-level debugger, a profiler, and utilities that aid development. It allows separate compilation of modules and shared global data.
Classification: Coding, Testing, Compiler, Debugger, Library, Performance/Timing Analyzer
Features:
Languages Supported: Pascal
Configurations: HP, Sun/OS, Sun/SPARC, VAX/VMS

Tool: PATHVU
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 3/15/93 Report Updated: 7/05/94

Vendor: Compuware Corp.
POC: Lynn M. Allman
Phone: 313-737-7300 Fax: 313-737-7108
E-mail:
Address: 31440 Northwestern Hwy.
Farmington Hills, MI 48334-2564

Description: PATHVU is a structure checker, symbolic execution, reverse engineering, static path flow analyzer, Cross Referencing Tool, and complexity measurer tool.
Classification: Coding, Reengineering, Complexity Measurer, Cross Referencing Tool, Reverse Engineering, Structure Checker, Symbolic Execution Tool
Features:
Languages Supported: COBOL, SQL
Configurations: IBM/MVS, PC/MS-DOS

Tool: PC-Lint
Vendor: Gimpel Software

Version:	6.0	Release Date:	10/01/91	POC:	Anna Gimpel		
Number Sold:	16,000+	Single User Price:	$139-$239	Phone:	215-584-4261	Fax:	215-584-4266
Report Date:	5/06/92	Report Updated:	12/27/93	E-mail:			
				Address:	3207 Hogarth Ln.		
		Site License Available			Collegeville, PA 19426		

Description: PC-Lint is a source code analyzer that will generate a list of errors, bugs, and inconsistencies. It will uncover coding errors, which simplifies the testing and debugging process.
Classification: Coding, Reengineering, Syntax & Semantics Analyzer
Features: Find latent and locate coding errors
Languages Supported: C
Configurations: IBM/PC, OS/2, MS-DOS

Tool: PC-METRIC
Vendor: SET Laboratories, Inc.

Version:	4.0	Release Date:	3/26/93	POC:	Teresa M. Harrison		
Number Sold:	2,000+	Single User Price:	$399	Phone:	503-829-7123	Fax:	–
Report Date:	2/02/93	Report Updated:	7/05/94	E-mail:			
Training Available		Newsletter Available		Address:	PO Box 868		
Evaluation Copy Available		Site License Available			Mulino, OR 97042		

Description: PC-METRIC is a structure checker software measurement tool that calculates McCabe's cyclomatic complexity metrics, Halstead's software science metrics, and a variety of other source code metrics including line counts.
Classification: Coding, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Size Measurer
Features: SLOC Actuals
Languages Supported: Ada, Assembler, Basic, C, C++, COBOL, FORTRAN, JOVIAL, Modula-2, Pascal, PL/1
Configurations: PC/MS-DOS, PC/UNIX

Tool: PCYACC
Vendor: ABRAXAS Software, Inc.

Version:	5.0	Release Date:	1/01/86	POC:	Elizabeth Layton		
Number Sold:	2000	Single User Price:	$495+	Phone:	503-244-5253	Fax:	503-244-8375
Report Date:	4/06/93	Report Updated:	12/20/93	E-mail:			
				Address:	5530 S.W. Kelly		
Evaluation Copy Available		Site License Available			Portland, OR 97201		

Description: PCYACC is a complete Language Development Environment that generates ANSI C source code from input Language Description Grammars for building assemblers, compilers, etc.
Classification: Coding, Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada, C, COBOL, FORTRAN, Pascal
Configurations: MS-DOS, OS2, UNIX, MAC, NT

Tool: Perennial Driver/Monitor
Vendor: Perennial Corp.

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	408-748-2900	Fax:	408-748-2909
Report Date:	3/15/93	Report Updated:		E-mail:			
				Address:	4699 Old Ironsides Dr., Suite 210		
					Santa Clara, CA 95054		

Description: Perennial Drive/Monitor is a test manager.
Classification: Testing, Test Execution Manager
Features:
Languages Supported: --
Configurations: UNIX

Tool: perfmeter

Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 3/15/93 Report Updated: 5/16/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: perfmeter is a Performance/Timing Analyzer.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: perfmon

Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 3/15/93 Report Updated: 7/05/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: perfmon is a Performance/Timing Analyzer.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: Performance Coverage Analyzer (PCA)

Version: 11.2 Release Date: 11/01/93
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 12/23/92 Report Updated: 7/05/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: VAX DEC/Performance Coverage Analyzer (PCA) is used to gather performance and test execution coverage information. Block execution times, page faulting statistics, VMS service usage, I/O problems, and code path data are collected and reported.
Classification: Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer, Performance/Timing Analyzer, Session Documenter, Status Displayer
Features:
Languages Supported: Ada, C, COBOL, FORTRAN, Pascal
Configurations: VAX/Open VMS, Alpha AXP/OSF

Tool: PISCES-Automatic Test Case Generator

Version: 1.1 Release Date: 12/01/93
Number Sold: -- Single User Price: $5500
Report Date: 1/04/94 Report Updated: 7/07/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Reliable Software Technologies Corp.
POC: Jeffery E. Payne
Phone: 703-742-8873 Fax: 703-742-9836
E-mail: jepayn@mothra.isse.gmu.ed
Address: 11150 Sunset Hills Rd.
Reston, VA 22090

Description: PISCES is part of the PISCES Software Analysis Toolkit. Generates test cases automatically from source code that satisfy coverage criteria (branch & statement coverges).
Classification: Testing, Quality Assurance, Code-Based Test Case Generator, Coverage/Frequency Analyzer, Test Data Generator
Features: X Window-based Tool
Languages Supported: Ada, C, FORTRAN
Configurations: UNIX, Sun/Sun OS

Tool: PISCES-Software Testability Analysis
Vendor: Reliable Software Technologies Corp.

Version:	1.1	Release Date:	12/01/93	POC:	Jeffery E. Payne		
Number Sold:	--	Single User Price:	$5,500	Phone:	703-742-8873	Fax:	703-742-9836
Report Date:	8/30/93	Report Updated:	7/05/94	E-mail:	jepayn@mothra.isse.gmu.ed		
Training Available		Newsletter Available		Address:	11150 Sunset Hills Rd.		
Evaluation Copy Available		Site License Available			Reston, VA 22090		

Description: PISCES-Software Testability Analysis is part of the PISCES Software Analysis Toolkit. A dynamic testability analysis that provides a framework for performing software testing verification in a structured manner. Tool is usable during both unit and system testing.
Classification: Coding, Testing, Quality Assurance, Metrics, Coverage/Frequency Analyzer, Data Reducer & Analyzer, Debugger, Test Execution Manager, Test Planner
Features: Testability Tool
Languages Supported: Ada, C, FORTRAN
Configurations: UNIX, Sun/Sun OS

Tool: pixie
Vendor: Digital Equipment Corp.

Version:	1.38	Release Date:	10/01/93	POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-344-4825	Fax:	603-881-2381
Report Date:	3/15/93	Report Updated:	7/05/94	E-mail:			
				Address:	146 Mairr St.		
					Maynard, MA 01754-2571		

Description: pixie provides detailed information about program execution timing. It partitions a program into basic blocks, writes instrumentation code, and counts the execution of each basic block.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: C, C++, FORTRAN, Pascal
Configurations: DECstation/ULTRIX

Tool: PLASMA
Vendor: American InterFace Computer, Inc.

Version:	3.0	Release Date:	7/15/92	POC:	Milan Patel		
Number Sold:	--	Single User Price:	$16,300	Phone:	512-327-5344	Fax:	512-327-5176
Report Date:	1/06/93	Report Updated:	7/05/94	E-mail:			
Training Available		Newsletter Available		Address:	One westlake Plaza, Suite 200		
					Austin, TX 78746		

Description: COBOL Visual Access Tool allows the COBOL Maintenance programmer to interactively investigate control flow, data flow, shared memory, cross referencing, file usage and more.
Classification: Design, Coding, Requirements Analysis, Testing, Reengineering, Case-Based Reasoning, Coverage/Frequency Analyzer, Cross Referencing Tool, Reverse Engineering, Run-Time Error Checker, Status Displayer, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: UNIX

Tool: PLAYBACK
Vendor: Compuware Corp.

Version:	5.2	Release Date:	11/16/93	POC:	Lynn M. Allman		
Number Sold:	900+	Single User Price:	(Contact Vendor)	Phone:	313-737-7300	Fax:	313-737-7108
Report Date:	3/15/93	Report Updated:	7/05/94	E-mail:			
				Address:	31440 Northwestern Hwy.		
					Farmington Hills, MI 48334-2564		

Description: PLAYBACK is a capture-replay tool, DB2 provides extensions equivalent capability for DB2 table activity related to test transactions. File Extension provides the same capability for VSAM, BDAM, BSAM files; Simulcast is an optional training and help desk tool.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager
Features: Automated Capture
Languages Supported: All
Configurations: IBM/MVS, IBM/VSE

Tool: plusFORT
Version: 4.0 | Release Date: 4/01/92
Number Sold: 1,000 | Single User Price: $2,200
Report Date: 5/19/93 | Report Updated: 5/23/94
Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: OTG Systems, Inc.
POC: Tammy Gillen
Phone: 717-343-8200 | Fax: 717-222-9103
E-mail:
Address: Route 106, Suite 300, PO Box 239
Clifford, PA 18413-0239

Description: plusFORT is a multipurpose suite of tools for analyzing and improving FORTRAN programs.
Classification: Coding, Reengineering, Reformatter, Restructurer, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: On request

Tool: preVue
Version: 3.5 | Release Date: 1/01/87
Number Sold: | Single User Price: (Contact Vendor)
Report Date: 12/02/91 | Report Updated: 7/05/94
Training Available
Evaluation Copy Available | Site License Available

Vendor: Performance Awareness Crop.
POC: Technical Support
Phone: 717-343-8200 | Fax: 717-222-9103
E-mail:
Address: Route 106, Suite 300, PO Box 239
Clifford, PA 18413-0239

Description: preVue provides a single automated testing solution for regression testing, stress load testing, and performance measurement of UNIX and non-UNIX systems. preVue utilizes Remote Terminal Emulation to replicate the user workload.
Classification: Testing, Quality Assurance, Capture-Replay Tool, Emulator, Performance/Timing Analyzer, Reliability Analyzer, Status Displayer
Features:
Languages Supported: All
Configurations: Apollo/386/ix, DEC, DEC/ULTRIX, HP/HP-UX, IBM/AIX, Motorola, NCR, Sun/Sun OS

Tool: preVue-X
Version: 3.5 | Release Date: 1/01/90
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 12/02/92 | Report Updated: 7/05/94
Evaluation Copy Available | Site License Available

Vendor: Performance Awareness Crop.
POC: Technical Support
Phone: 717-343-8200 | Fax: 717-222-9103
E-mail:
Address: Route 106, Suite 300, PO Box 239
Clifford, PA 18413-0239

Description: preVue-X provides a GUI for testers to automatically record X clients, create test scripts, trace X protocol activity between the client(s) and the server, and evaluate the summarized reports and graphs generated.
Classification: Testing, Quality Assurance, Capture-Replay Tool, Data Reducer & Analyzer, Emulator, Performance/Timing Analyzer
Features: GUI-based Testing
Languages Supported: All
Configurations: AIX, HP-UX, Sun OS, UNIX, DEC, Motorola, NCR

Tool: Problem Alert System (PAS)
Version: | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 12/23/92 | Report Updated: 7/05/94

Vendor: Legent Corp.
POC: Steven King
Phone: 800-726-1637 | Fax: 508-836-5992
E-mail:
Address: 575 Herndon Parkway
Herndon, VA 22070

Description: PAS aids in finding and classifying problems and system improvements in conjunction to the user's IS organization. It automatically researches solutions to problems and acts as a guideline to aid understanding and dealing with issues.
Classification: Testing, Quality Assurance, Defect/Change Tracker
Features:
Languages Supported: --
Configurations: OS/2, Windows, PC/MS-DOS

Tool: PROBLEM PROGRAM EVALUATION (PPE)
Vendor: Boole & Babbage, Inc.

Version: -- | Release Date: | POC: Technical Support
Number Sold: -- | Single User Price: (Contact Vendor) | Phone: 415-788-4700 | Fax: 415-788-1144
Report Date: 3/15/93 | Report Updated: 5/12/94 | E-mail:
Address: 601 Montgomery St., Suite 675, San Francisco, CA 94111

Description: PROBLEM PROGRAM EVALUATION (PPE) performs system analysis, workload analysis, and program analysis, providing data on excessive CPU usage for both system modules and application program modules.
Classification: System Simulation, Testing, Quality Assurance, Performance/Timing Analyzer
Features:
Languages Supported: COBOL, COBOL II
Configurations: MVS, XA

Tool: PRODOC re/NuSys Workbench
Vendor: SCANDURA & Assoc.

Version: | Release Date: 1/01/93 | POC: Alice B. Scandura
Number Sold: -- | Single User Price: (Contact Vendor) | Phone: 215-664-1207 | Fax: 215-664-7276
Report Date: 4/07/93 | Report Updated: 5/16/94 | E-mail:
Training Available | Newsletter Available | Address: 822 Montgomery Ave. Suite 317, Narberth, PA 19072

Description: PRODOC re/NuSys Workbench is a fully integrated, full lifecycle design, development and maintenance system for several Languages. PRODOC is also a translator (C-Ada, Cobol-Ada, Cobol-C, Fortran-Ada, Fortran-C, Pascal-Ada, and Pascal-C).
Classification: System Simulation, Requirements Trace, Design, Coding, Requirements Analysis, Documentation, Quality Assurance, Metrics, Reengineering, Reuse, Database, Software Engineering Environment, Complexity Measurer, Coverage/Frequency Analyzer, Cross Referencing Tool, Forward Engineering, Redocumenter, Restructurer, Reusable Components Identifier, Reverse Engineering, Simulator, Source Code Translator, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada, C, C++, COBOL, FORTRAN, Pascal, PL/1
Configurations: UNIX, DEC/OSF/1, IBM/AIX, PC/MS-DOS, PC/OS/2, Sun/Solaris2.1, Sun/SPARC, Sun/Sun OS

Tool: Productivity Manager
Vendor: Productivity Management Group, Inc.

Version: 2.4 | Release Date: 1/01/93 | POC: Walter E. Lopus
Number Sold: -- | Single User Price: $10,000 | Phone: 716-689-7724 | Fax: --
Report Date: 2/26/93 | Report Updated: 7/06/94 | E-mail:
Training Available | Address: 178 Foxhunt Lane
Evaluation Copy Available | Site License Available | East Amherst, NY 14051

Description: Productivity Manager provides organizations with a flexible and comprehensive structure to evaluate their software engineering processes. It stores detailed and summary function point counts as well as costs defects, time, environment, tools and techniques.
Classification: Requirements Analysis, Project Management, Quality Assurance, Metrics, Complexity Measurer, Size Measurer
Features: Function Points
Languages Supported: --
Configurations: PC

Tool: prof
Vendor: Digital Equipment Corp.

Version: -- | Release Date: | POC: Technical Support
Number Sold: -- | Single User Price: (Contact Vendor) | Phone: 800-344-4825 | Fax: 603-881-2381
Report Date: 3/15/93 | Report Updated: | E-mail:
Address: 146 Mainr St., Maynard, MA 01754-2571

Description: This is a syntax and semantics analyzer.
Classification: Coding, Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: ProTerm
Version: 2.02 Release Date:
Number Sold: 125+ Single User Price: (Contact Vendor)
Report Date: 2/17/93 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Sequel Corp.
POC: Technical Support
Phone: 800-PROTERM Fax: 405-942-7958
E-mail:
Address: 1300 S. Meridian, Suite 304
Oklahoma City, OK 73108

Description: ProTeam furnishes services for batch and on-line systems, including multiple sessions, screen review, and creation and playing of scripts. It is designed to solve problems usually found in areas such as testing, EDI, automation, and quality assurance.
Classification: Coding, Testing, Quality Assurance, X Communications, Capture-Replay Tool
Features:
Languages Supported: All
Configurations: IBM/MVS

Tool: PSS Ada Toolset for ZR34325
Version: 3.001 Release Date: 10/11/93
Number Sold: 4 Single User Price: $50,000+
Report Date: 6/26/93 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Proprietary Software Systems, Inc.
POC: Richard Gilinsky
Phone: 310-394-5233 Fax: 310-393-3122
E-mail:
Address: 429 Santa Monica Blvd., Suite 430
Santa Monica, CA 90401

Description: PSS Ada Toolset for ZR34325 is a compiler, assembler, linker, and debugger that targets the Zoran ZR34325 floating point digital signal processor.
Classification: Coding, Testing, Quality Assurance, Reengineering, Software Engineering Environment, Assembler, Compiler, Coverage/Frequency Analyzer, Cross Compiler, Cross Referencing Tool, Debugger, Linker
Features:
Languages Supported: Ada
Configurations: PC/MS-DOS, VAX/VMS

Tool: PSS ADA/JOVIAL 1750A SUPPORT TOOLS
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 6/28/93 Report Updated: 6/01/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Proprietary Software Systems, Inc.
POC: Richard Gilinsky
Phone: 310-394-5233 Fax: 310-393-3122
E-mail:
Address: 429 Santa Monica Blvd., Suite 430
Santa Monica, CA 90401

Description: The PSS ADA/JOVIAL 1750A SUPPORT TOOLS converts PSS standard load modules and debug files to the equivalent HP absolute, link_sym, & asmb_symb files. This permits the use of the HP software performance analysis capability.
Classification: Coding, Testing, Debugger, Performance/Timing Analyzer
Features:
Languages Supported: Ada, Assembler, JOVIAL
Configurations: VAX/VMS

Tool: PSS JOVIAL Compiler
Version: 12.000 Release Date: 10/01/92
Number Sold: 30+ Single User Price: $30,000
Report Date: 6/25/93 Report Updated: 7/06/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Proprietary Software Systems, Inc.
POC: Richard Gilinsky
Phone: 310-394-5233 Fax: 310-393-3122
E-mail:
Address: 429 Santa Monica Blvd., Suite 430
Santa Monica, CA 90401

Description: PSS JOVIAL Compiler is part of the JIPSE toolset. It is used with embedded applications. It uses the AdaRaid debugger and supports PSS Ada/1750A.
Classification: Coding, Testing, Metrics, Reengineering, Software Engineering Environment, Compiler, Complexity Measurer, Cross Compiler, Debugger
Features:
Languages Supported: JOVIAL
Configurations: IBM, UNIX, VAX/VMS

Tool: PSS Link Editor
Vendor: Proprietary Software Systems, Inc.

Version:	–	Release Date:		POC:	Richard Gilinsky		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	310-394-5233	Fax:	310-393-3122
Report Date:	6/26/93	Report Updated:	6/01/94	E-mail:			
Training Available				Address:	429 Santa Monica Blvd., Suite 430		
		Site License Available			Santa Monica, CA 90401		

Description: The PSS Link Editor combines multiple Ada, JOVIAL, and Assembly language object modules into either an ASCII or a blocked load module.
Classification: Coding, Cross Referencing Tool, Linker
Features:
Languages Supported: Ada, Assembler, JOVIAL
Configurations: VAX/VMS

Tool: PSS Macro Assembler
Vendor: Proprietary Software Systems, Inc.

Version:	–	Release Date:		POC:	Richard Gilinsky		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	310-394-5233	Fax:	310-393-3122
Report Date:	6/26/93	Report Updated:	7/06/94	E-mail:			
Training Available				Address:	429 Santa Monica Blvd., Suite 430		
Evaluation Copy Available		Site License Available			Santa Monica, CA 90401		

Description: PSS Macro Assembler translates 1750A instructions and directives into relocatable object modules. It provides symbolic debug support and is compatible with JOVIAL and Ada compilers.
Classification: Coding, Testing, Reengineering, Assembler, Cross Referencing Tool, Debugger
Features:
Languages Supported: Ada, Assembler, JOVIAL
Configurations: VAX/VMS

Tool: Purify
Vendor: Pure Software, Inc.

Version:	2.0	Release Date:	2/01/93	POC:	Eric LaBadie		
Number Sold:	6,000	Single User Price:	(Contact Vendor)	Phone:	408-720-1600	Fax:	408-720-9200
Report Date:	3/17/93	Report Updated:	7/06/94	E-mail:	labadie@pure.com		
		Newsletter Available		Address:	1309 S. Mary Ave.		
Evaluation Copy Available		Site License Available			Sunnyvale, CA 94087		

Description: Purify is a tool that detects and pinpoints every memory access error and memory leak at the object code level, then pinpoints them in the source code. This tool also pinpoints out of bounds errors and accessing free or uninitialized memory errors.
Classification: Coding, Testing, Quality Assurance, Debugger, Run-Time Error Checker, Status Displayer
Features:
Languages Supported: C, C++, FORTRAN
Configurations: HP/Solaris2.1, Sun/SPARC, Sun/Sun OS

Tool: Q/Artisan
Vendor: Eden Systems Corp.

Version:	2.2	Release Date:	1/01/91	POC:	Elizabeth A. Wilson		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-288-9510	Fax:	317-843-2271
Report Date:	4/08/93	Report Updated:	7/06/94	E-mail:			
Training Available		Newsletter Available		Address:	14950 Greyhound Court, Suite 201		
Evaluation Copy Available		Site License Available			Carmel, IN 46032		

Description: Q/Artisan is a rule-based COBOL transformation software tool that helps the programs to cooperate with more of the group's programming standards without any effort from the programmers.
Classification: Coding, Quality Assurance, Reengineering, Software Engineering Environment, Auditor, Commenter, Redocumenter, Restructurer, Retargeting
Features:
Languages Supported: COBOL
Configurations: IBM/MVS

Tool: Q/ARTISAN PC
Version: 2.2 | Release Date: 1/01/91
Number Sold: – | Single User Price: $1495
Report Date: 4/08/93 | Report Updated: 7/06/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: Eden Systems Corp.
POC: Elizabeth A. Wilson
Phone: 800-288-9510 Fax: 317-843-2271
E-mail:
Address: 14950 Greyhound Court, Suite 201
Carmel, IN 46032

Description: Q/ARTISAN PC rewrites existing COBOL code to design more reliable COBOL programs. It is a rules-based transformation tool. Customers can choose transformation rules to be used in generating customized rules or rewriting programs.
Classification: Coding, Quality Assurance, Reengineering, Software Engineering Environment, Auditor, Commenter, Redocumenter, Restructurer, Retargeting
Features:
Languages Supported: COBOL
Configurations: PC-DOS, OS/2 (2MB Memory).

Tool: Q/AUDITOR PL/I
Version: 2.4 | Release Date: 1/01/92
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 1/26/93 | Report Updated: 7/06/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: Eden Systems Corp.
POC: Melisa Duffy
Phone: 800-288-9510 Fax: 317-843-2271
E-mail:
Address: 9302 N. Meridian St., Suite 350
Indianapolis, IN 46260-1820

Description: Q/AUDITOR PL/I a quality assurance measurement tool, allows organizations to choose their own critical programming success factors. It measures adherence to these standards by defining up to five unique levels of quality.
Classification: Coding, Documentation, Project Management, Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Auditor, Complexity Measurer, Reliability Analyzer, Structure Checker
Features:
Languages Supported: PL/1
Configurations: MVS (all versions)

Tool: Q/AUDITOR PL/I PC
Version: 2.4 | Release Date: 1/01/92
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 4/08/93 | Report Updated: 5/23/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: Eden Systems Corp.
POC: Melisa Duffy
Phone: 800-288-9510 Fax: 317-843-2271
E-mail:
Address: 9302 N. Meridian St., Suite 350
Indianapolis, IN 46260-1820

Description: Q/AUDITOR PL/I PC is a quality assurance measurement tool that allows users to choose their programming factors. It measures adherence to specified factors with up to five different quality levels.
Classification: Coding, Documentation, Project Management, Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Auditor, Complexity Measurer, Reliability Analyzer, Structure Checker
Features:
Languages Supported: PL/1
Configurations: PC/OS/2

Tool: QA Administer
Version: 2.0 | Release Date: 1/01/92
Number Sold: 50+ | Single User Price: $11,600
Report Date: 4/25/94 | Report Updated: 7/06/94
Training Available
Site License Available

Vendor: ASTA, Inc.
POC: Tom Walsh
Phone: 603-889-2230 Fax: 603-881-3740
E-mail:
Address: 1 Chestnut St., Suite 205-206
Nashua, NH 03060

Description: QA Administer automates procedures by quality assurance programs: ISO9000, TQM, and SEI CMM. Change requests are logged, authorized, and assigned to programmers formally. Standards testing and quality measurement are performed on each change.
Classification: Requirements Trace, Coding, Testing, Project Management, Configuration Management, Auditor, Debugger, Defect/Change Tracker
Features:
Languages Supported: C, C++, FORTRAN
Configurations: Unix work station, PC/SCO desktop 2.0

Tool: QA C
Vendor: ASTA, Inc.

Version:	3.1	Release Date:	5/03/93	POC:	Tom Walsh		
Number Sold:	1,000+	Single User Price:	$12,700	Phone:	603-889-2230	Fax:	603-881-3740
Report Date:	4/25/94	Report Updated:	7/06/94	E-mail:			
Training Available				Address:	1 Chestnut St., Suite 205-206		
		Site License Available			Nashua, NH 03060		

Description: QA C analyzes, improves, and maintains the quality of C programs. By automating an error-detection process it can reduce the cost of manual error finding.
Classification: Coding, Testing, Project Management, Quality Assurance, Metrics, Reengineering, Reuse, Auditor, Complexity Measurer, Debugger, Defect/Change Tracker, Maintainability Analyzer, Reliability Analyzer, Restructurer, Reusable Components Identifier, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: Sun, HP 700, RISC 6000, Silicon Graphics, Cray, Convex, DEC, SCO, UNIX

Tool: QA C++
Vendor: ASTA, Inc.

Version:	1.2	Release Date:	10/01/93	POC:	Tom Walsh		
Number Sold:	50+	Single User Price:	$16,000	Phone:	603-889-2230	Fax:	603-881-3740
Report Date:	4/25/94	Report Updated:	7/06/94	E-mail:			
Training Available				Address:	1 Chestnut St., Suite 205-206		
		Site License Available			Nashua, NH 03060		

Description: QA C++ analyzes, improves, and maintains the quality of C++ programs. By automating an error-detection process, it can reduce the cost of manual error finding.
Classification: Coding, Quality Assurance, Metrics, Reengineering, Auditor, Complexity Measurer, Defect/Change Tracker, Maintainability Analyzer, Reliability Analyzer, Restructurer, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: C++
Configurations: All UNIX work stations, PC under SCO desk top 2.0

Tool: QA FORTRAN
Vendor: ASTA, Inc.

Version:	6.1	Release Date:	6/01/89	POC:	Tom Walsh		
Number Sold:	250+	Single User Price:	$11,600	Phone:	603-889-2230	Fax:	603-881-3740
Report Date:	4/25/94	Report Updated:	7/06/94	E-mail:			
Training Available				Address:	1 Chestnut St., Suite 205-206		
		Site License Available			Nashua, NH 03060		

Description: QA FORTRAN is a toolset for analyzing, improving, and maintaining FORTRAN programs. It checks for hundreds of reliability, portability, and maintenance issues and computes 28 quality metrics about the code.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Auditor, Complexity Measurer, Debugger, Defect/Change Tracker, Maintainability Analyzer, Reliability Analyzer, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: All UNIX Workstation, HP, Sun, etc. PC's SCO Open Desktop 2.0, VMS 5.X

Tool: QA Process Control Manager (QA PCM)
Vendor: ASTA, Inc.

Version:	2.0	Release Date:	8/01/92	POC:	Tom Walsh		
Number Sold:	34	Single User Price:	(Contact Vendor)	Phone:	603-889-2230	Fax:	603-881-3740
Report Date:	4/25/94	Report Updated:	7/06/94	E-mail:			
Training Available				Address:	1 Chestnut St., Suite 205-206		
		Site License Available			Nashua, NH 03060		

Description: QA PCM maintains software quality by combining direct measurement of programs with configuration and change control system. It only allows modifications with proper authorization and testing.
Classification: Coding, Project Management, Configuration Management, Quality Assurance, Reengineering, Software Engineering Environment, Defect/Change Tracker
Features:
Languages Supported: All
Configurations: Most Unix workstation, SCO desktop 2.0

Tool: QA/S
Version: 3.6 Release Date:
Number Sold: -- Single User Price: $2295
Report Date: 11/04/93 Report Updated: 7/06/94

Vendor: Hertzler Systems, Inc.
POC: Evan Roth
Phone: 219-533-0571 Fax: 219-533-3885
E-mail:
Address: 17482 Eisenhower Dr. N., P.O. Box 588
Goshen, IN 46526

Description: QA/S offers SPC for analyzing and improving process capability and control. QA/S allows you to set a six-sigma goal .
Classification: Testing, Quality Assurance, Data Reducer & Analyzer, Defect/Change Tracker
Features:
Languages Supported: English
Configurations: MS-DOS, PC/Windows

Tool: QAPlus
Version: 4.72 Release Date: 1/01/94
Number Sold: Single User Price: $160
Report Date: 6/25/92 Report Updated: 6/13/94

Vendor: DiagSoft, Inc.
POC: Technical Support
Phone: 408-438-8247 Fax: 408-438-7113
E-mail:
Address: 5615 Scotts Valley Dr., Suite 140
Scotts Valley, CA 95066

Description: A PC troubleshooting for software and hardware.
Classification: Testing, Quality Assurance, Optimizer, Performance/Timing Analyzer, Run-Time Error Checker
Features:
Languages Supported:
Configurations: PC/MS-DOS

Tool: QES/Architect
Version: 3.1 Release Date: 11/01/92
Number Sold: 50 Single User Price: $8,000
Report Date: 2/17/93 Report Updated: 7/06/94
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Quality Engineering Software, Inc.
POC: Ian Rankim
Phone: 203-278-7252 Fax: 203-527-0824
E-mail:
Address: 410 Asylum St., Suite 415
Hartford, CT 06103

Description: QES/Architect helps create testing data and aids in the management of testing and quality assurance. It can automatically generate data and test field data ranges, read system output data, capture and play tests back with the system data, and much more.
Classification: Design, Coding, Testing, Quality Assurance, Software Engineering Environment, Capture-Replay Tool, Requirements-Based Test Case Generator, Session Documenter, Simulator, Test Data Generator, Test Instrumenter
Features:
Languages Supported: All
Configurations: DEC, HP, IBM, UNIX, VAX

Tool: QES/Manager
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 3/17/93 Report Updated: 7/06/94

Vendor: Quality Engineering Software, Inc.
POC: Ian Rankim
Phone: 203-278-7252 Fax: 203-527-0824
E-mail:
Address: 410 Asylum St., Suite 415
Hartford, CT 06103

Description: QES/Manager increases users control over their testing and quality assurance. It helps improve the quality of the software, and can be used to plan, organize, schedule, secure, edit, document, report, and manage testing activities.
Classification: Requirements Trace, Requirements Analysis, Testing, Quality Assurance, Test Execution Manager, Test Planner
Features:
Languages Supported: --
Configurations: PC

Tool: QualGen
Vendor: Software Systems Design, Inc.

Version: 3.1 | Release Date: 1/01/93 | POC: Dr. Thomas S. Radi
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 714-625-6147 | Fax: 714-626-9667
Report Date: 12/29/92 | Report Updated: 7/06/94 | E-mail:
Training Available | Newsletter Available | Address: 3627 Padua Ave.
Evaluation Copy Available | Site License Available | Claremont, CA 91711

Description: QualGen helps manage the quality of software development projects by providing an extensive quality analysis and reports mechanism. It automatically analyzes Ada or C source code at any stage of development to extract over 250 predefined measurements and metrics as well as provides the capability of tracking project specific metrics. In addition to measuring the quality of the source code, QualGen's PinPointer capability identifies the location of any anomalies that exist in the code.
Classification: Coding, Quality Assurance, Metrics, Reengineering, Auditor, Defect/Change Tracker, Maintainability Analyzer, Reliability Analyzer, Size Measurer, Syntax & Semantics Analyzer
Features: SLOC Actuals
Languages Supported: Ada, C
Configurations: HP/HP-UX, PC/MS-DOS, RISC 6000, Sun/Sun OS, UNIX, VAX/VMS

Tool: QualityFirst C
Vendor: International Software Automation, Inc.

Version: 1.2 | Release Date: | POC: Kevin ZHU
Number Sold: | Single User Price: (Contact Vendor) | Phone: 510-494-8888 | Fax: 510-494-1888
Report Date: 12/27/93 | Report Updated: 7/06/94 | E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Evaluation Copy Available | Site License Available | Fremont, CA 94538

Description: QualityFirst C is a software testing, quality assurance, and Reengineering toolkit. It provides static and dynamic analysis including system structure, control logic, complexity, and test coverage analysis.
Classification: Coding, Testing, Documentation, Metrics, Reengineering, Complexity Measurer, Coverage/Frequency Analyzer, Cross Referencing Tool, Redocumenter, Reverse Engineering, Structure Checker, Test Instrumenter
Features:
Languages Supported: C
Configurations: PC/MS-DOS

Tool: QualityTEAM
Vendor: Scopus Technology, Inc.

Version: | Release Date: | POC: Technical Support
Number Sold: – | Single User Price: (Contact Vendor) | Phone: 510-494-8888 | Fax: 510-494-1888
Report Date: 1/13/94 | Report Updated: 7/06/94 | E-mail: isa@netcom.com
Address: 39350 Civic Center Dr., #250
Fremont, CA 94538

Description: QualityTEAM allows managers to establish and enforce processes for accepting, assigning, tracking, fixing, closing, and testing software incidents including bugs, documentation errors, and feature requests. Supports the ISO 9000/SEI CMM standards.
Classification: Coding, Testing, Quality Assurance, Metrics, Debugger, Defect/Change Tracker
Features:
Languages Supported:
Configurations: HP, IBM, Mac/Mac OS, PC/Windows, Sun

Tool: Quantify
Vendor: Pure Software, Inc.

Version: 1.1 | Release Date: 1/01/94 | POC: Eric LaBadie
Number Sold: – | Single User Price: $1,198 | Phone: 408-720-1600 | Fax: 408-720-9200
Report Date: 7/28/93 | Report Updated: 7/06/94 | E-mail: labadie@pure.com
Newsletter Available | Address: 1309 S. Mary Ave.
Evaluation Copy Available | Site License Available | Sunnyvale, CA 94087

Description: Quantify is a run-time performance bottle-neck detector profiler.
Classification: Requirements Analysis, Testing, Performance/Timing Analyzer, Run-Time Error Checker
Features:
Languages Supported: C, C++, FORTRAN
Configurations: Sun/SPARC, Sun/Sun OS

Tool: QUARTZ Remote Terminal Emulator
Version: -- Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 3/17/93 Report Updated: 7/06/94
Training Available

Vendor: AT&T, Software Solutions Group
POC: Technical Support
Phone: 800-462-8146 Fax: 908-580-6355
E-mail:
Address:

Description: The QUARTZ can be used for performance analysis, application and system software testing, quality control sampling of live systems, and live customer demonstrations. Its software includes workload capture/playback and performance displaying.
Classification: System Simulation, Testing, Quality Assurance, Capture-Replay Tool, Data Reducer & Analyzer, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: AT&T 3B2/UNIX, NCR/UNIX, PC/UNIX

Tool: QUEMAN
Version: 7.0 Release Date: 4/01/93
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 3/17/93 Report Updated: 7/06/94

Vendor: Data Center Software
POC: Dave Powers
Phone: 408-720-1600 Fax: 408-720-9200
E-mail: labadie@pure.com
Address: 1309 S. Mary Ave.
Sunnyvale, CA 94087

Description: QUEMAN automates the complete control and processing of all queues (batch, print, generic, terminal, and server) on your VAX system. Menus allow constant monitoring and control. Allows decentralization without losing system security.
Classification: Testing, OS Utility, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: VAX/VMS

Tool: RE-DOC
Version: 2.0 Release Date: 1/01/92
Number Sold: 14+ Single User Price: 28,000 DM
Report Date: 11/20/92 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: GPP Ges fur Prozessrechnerprogrammierung
POC: Mr. Ralf Lahm
Phone: 49-89-613040 Fax: 49-89-61304294
E-mail:
Address: Kolpingring 18a
Oberhaching, D-8024 Germany

Description: RE-DOC will create a variety of different, predominantly graphical documents from the original source code for an overview of the software's interrelationships automatically.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Redocumenter, Reverse Engineering, Structure Checker
Features:
Languages Supported: Ada, C, CMS-2, FORTRAN, MACRO, Pascal
Configurations: DEC, HP, PC, Sun, VAX, VAXstation

Tool: RE-SPEC
Version: 2.0 Release Date: 1/01/92
Number Sold: 45+ Single User Price: 15,450 DM
Report Date: 11/20/92 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: GPP Ges fur Prozessrechnerprogrammierung
POC: Tech. Support (GPPGFP)
Phone: 49-89-613040 Fax: 49-89-61304294
E-mail:
Address: Kolpingring 18a
Oberhaching, D-8024 Germany

Description: RE-SPEC runs specified designs out of existing sources written in C, Pascal, COBOL, and more. Descriptions like flowcharts, dataflow and structure diagrams, and module connection diagrams can be produced. Translates from C, Cobol, Pascal, Fortran to Ada.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Redocumenter, Reverse Engineering, Source Code Translator, Structure Checker
Features:
Languages Supported: Ada, C, CMS-2, FORTRAN, MACRO, Pascal
Configurations: DEC, HP, HP/UNIX, IBM, PC/MS-DOS, Sun, Sun/Sun OS, VAX/VMS

Tool: Real-Time C (RTC)
Vendor: Ready Systems

Version:	–	Release Date:	1/01/91	POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	408-736-2600	Fax:	408-522-7197
Report Date:	3/17/93	Report Updated:	7/06/94	E-mail:			
				Address:	470 Potero Ave., PO Box 60217 Sunnyvale, CA 94086		

Description: RTC is an integrated real-time development package that includes an optimizing C compiler, a cross assembler, high-performance real-time libraries, linking loader, object module librarian, Tektronix Conversion Utility, and VT100 terminal emulator.
Classification: Coding, Reengineering, X Communications, Compiler, Cross Referencing Tool, Emulator, Library, Linker
Features:
Languages Supported: C
Configurations: MicroVAX/MicroVMS, PC/MS-DOS, VAX/VMS

Tool: RealTime Testware (RT)
Vendor: Donatech Corp.

Version:	–	Release Date:		POC:	Michael Mendocha		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	515-472-7474	Fax:	515-472-6244
Report Date:	12/23/92	Report Updated:	7/06/94	E-mail:			
				Address:	109 South Main St., PO Box 830 Fairfield, IA 52556		

Description: RealTime Testware is a software tool designed to test real-time embedded systems applications. RT is a test management and execution tool that tests new as well as existing products. It performs automated, nonintrusive, real-time regression testing.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Execution Manager
Features: Embedded Testing
Languages Supported: All
Configurations: VAX/VMS

Tool: REENgineering Environment and Workbench
Vendor: Science Applications Int'l Corp.

Version:		Release Date:		POC:	David A. Workman		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	407-282-6700 ext 260	Fax:	407-381-8436
Report Date:	1/03/94	Report Updated:	7/06/94	E-mail:	workmand@orlva.saic.com		
				Address:	3045 Technology Parkway Orlando, FL 32826-3299		

Description: REENEW is a C-based CASE environment designed to support the activities of reverse and forward engineering of C programs.
Classification: Design, Coding, Reengineering, Reuse, Software Engineering Environment, Code Generator, Cross Referencing Tool, Forward Engineering, Language Sensitive Editor, Redocumenter, Reformatter, Reverse Engineering, Source Code Translator, Structure Checker
Features:
Languages Supported: C
Configurations: IBM/AIX, PC/MS-DOS

Tool: REFINE/Ada
Vendor: Reasoning Systems, Inc.

Version:	1.1	Release Date:	11/01/93	POC:	Paul H. Davis		
Number Sold:	–	Single User Price:	$4,900	Phone:	415-494-6201	Fax:	415-494-8053
Report Date:	3/03/93	Report Updated:	5/10/94	E-mail:	sales@reasoning.com		
Training Available				Address:	3260 Hillview Ave. Palo Alto, CA 94034		
Evaluation Copy Available							

Description: REFINE/Ada is an interactive, graphical Reengineering tool that lets programmers assess, redocument, quality-check, and export existing Ada applications to CASE tools such as Software through Pictures.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Auditor, Redocumenter, Retargeting, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations: HP, IBM/AIX, RISC 6000, Sun/Sun OS

Tool: REFINE/C

Version: 1.1 | Release Date: 4/01/92
Number Sold: – | Single User Price: $4,900
Report Date: 3/03/93 | Report Updated: 5/10/94
Training Available
Evaluation Copy Available

Vendor: Reasoning Systems, Inc.
POC: Paul H. Davis
Phone: 415-494-6201 Fax: 415-494-8053
E-mail: sales@reasoning.com
Address: 3260 Hillview Ave.
Palo Alto, CA 94034

Description: REFINE/C is an interactive, graphical Reengineering tool that lets programmers assess, redocument, quality-check, and convert existing C applications to CASE tools such as Software through Pictures.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Auditor, Redocumenter, Retargeting, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: HP, IBM/AIX, RISC 6000, Sun/Sun OS

Tool: REFINE/COBOL

Version: 1.0 | Release Date: 11/01/92
Number Sold: – | Single User Price: $9,500
Report Date: 2/22/93 | Report Updated: 7/06/94
Training Available
Evaluation Copy Available

Vendor: Reasoning Systems, Inc.
POC: Paul H. Davis
Phone: 415-494-6201 Fax: 415-494-8053
E-mail: sales@reasoning.com
Address: 3260 Hillview Ave.
Palo Alto, CA 94034

Description: REFINE/COBOL is an interactive, graphical Reengineering tool that lets programmers analyze, redocument, and convert existing COBOL applications. Its features include modularizing large COBOL applications into manageable programs, creating calls to module.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Auditor, Redocumenter, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: HP, IBM/AIX, RISC 6000, Sun/Sun OS

Tool: REFINE/FORTRAN

Version: 1.3 | Release Date: 12/30/92
Number Sold: – | Single User Price: $4,900
Report Date: 2/22/93 | Report Updated: 5/10/94
Training Available
Evaluation Copy Available

Vendor: Reasoning Systems, Inc.
POC: Paul H. Davis
Phone: 415-494-6201 Fax: 415-494-8053
E-mail: sales@reasoning.com
Address: 3260 Hillview Ave.
Palo Alto, CA 94034

Description: REFINE/FORTRAN is an interactive, graphical Reengineering tool that lets programmers assess, redocument, quality-check, and convert existing FORTRAN applications.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Auditor, Redocumenter, Reverse Engineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: HP, IBM/AIX, Sun/Sun OS

Tool: Remote Terminal Emulator (RTE)

Version: 4.1 | Release Date: 9/29/92
Number Sold: > 70 | Single User Price: $640/month
Report Date: 12/28/92 | Report Updated: 7/06/94
Training Available
Site License Available

Vendor: Neal Nelson & Assoc.
POC: Michael J. Dandar
Phone: 703-448-1454 Fax: 703-442-0846
E-mail:
Address: 1420 Spring Hill Rd.
McLean, VA 22102

Description: RTE is a highly integrated hardware and software platform that connects to other computers that you want to test. It performs timing analysis and quality measurements. It can capture the results of any test performed for future playback.
Classification: Coding, Testing, Configuration Management, Quality Assurance, Capture-Replay Tool, Emulator, Performance/Timing Analyzer, Test Execution Manager
Features:
Languages Supported: --
Configurations: RTE SW ported/portable to any UNIX/UNIX-Derivative. OS & Platform

Tool: Requirements and Traceability Management (RTM) **Vendor:** Marconi Systems Technology

Version:	2.2	Release Date:	12/13/93	POC:	Paul Raymond		
Number Sold:	800	Single User Price:	(Contact Vendor)	Phone:	703-263-1260	Fax:	703-263-1533
Report Date:	3/03/93	Report Updated:	7/06/94	E-mail:	pr@mstus.com		
Training Available				Address:	4115 Pleasant Valley Rd., #100		
Evaluation Copy Available		Site License Available			Chantilly, VA 22021		

Description: RTM provides full requirements engineering capabilities along with traceability to any project item including design, code, documentation, hardware, and test cases. RTM is integrated with Software through Pictures, Interleaf, & Framemaker.
Classification: Requirements Trace, Coding, Requirements Analysis, Testing, Documentation, Requirements-Based Test Case Generator
Features: Document generation
Languages Supported: All
Configurations: HP/UNIX, IBM, Sun/SPARC, VAX/VMS

Tool: RTAda **Vendor:** Ready Systems

Version:	–	Release Date:	1/01/91	POC:	Mr. Jean-Claude Sarner		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	408-736-2600	Fax:	408-522-7197
Report Date:	3/18/93	Report Updated:	5/23/94	E-mail:			
				Address:	470 Potero Ave., PO Box 60217		
					Sunnyvale, CA 94086		

Description: RTAda is a real-time Ada development system for the Mil-Std-1750A instruction set architecture.
Classification: Coding, Testing, Reengineering, Compiler, Cross Referencing Tool, Debugger, Optimizer
Features:
Languages Supported: Ada
Configurations: MicroVAX/VMS, VAX/VMS

Tool: Run Time Debugger **Vendor:** MultiScope

Version:	1.03	Release Date:	10/01/91	POC:	Keith Szot		
Number Sold:	–	Single User Price:	$379	Phone:	415-968-4892	Fax:	415-968-4622
Report Date:	5/06/92	Report Updated:	7/06/94	E-mail:			
Training Available		Newsletter Available		Address:	1235 Pear Ave.		
		Site License Available			Mountain View, CA 94043		

Description: The MultiScope Debuggers provide both a GUI and CM interface, allowing both dual and single monitor debugging capabilities. MED and the crash analyzer can capture the state of your program after a run-time exception.
Classification: Coding, Testing, Quality Assurance, Reengineering, Debugger, Run-Time Error Checker
Features:
Languages Supported: --
Configurations: IBM/OS/2, PC/MS-DOS, PC/Window 3.0

Tool: RXVP80 **Vendor:** General Research Corp.

Version:	4.2-18	Release Date:	1/01/88	POC:	Michael G. Crawford		
Number Sold:	100+	Single User Price:	(Contact Vendor)	Phone:	805-964-7724	Fax:	805-967-7094
Report Date:	12/03/92	Report Updated:	5/16/94	E-mail:			
Training Available				Address:	5383 Hollister Ave., PO Box 6770		
Evaluation Copy Available		Site License Available			Santa Barbara, CA 93160-6770		

Description: RXVP80 is a FORTRAN testing tool that performs static analysis, program documentation, and execution coverage analysis. Inconsistencies in program structure and usages of variable names are also reported.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Reuse, Coverage/Frequency Analyzer, Cross Referencing Tool, Reusable Components Identifier, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: IBM/MVS, IBM/VM/CMS, PC/MS-DOS, VAX/VMS

Tool: Safe C Runtime Analyzer

Version:	4.2	Release Date:	1/01/87
Number Sold:	--	Single User Price:	$2,000-$2,400
Report Date:	12/02/92	Report Updated:	7/06/94

Evaluation Copy Available Site License Available

Vendor: Blossom/Catalytix Corp.

POC: Technical Support
Phone: 805-964-7724 Fax: 805-967-7094
E-mail:
Address: 5383 Hollister Ave., PO Box 6770
Santa Barbara, CA 93160-6770

Description: Safe C Runtime Analyzer consists of three modules: the Runtime Checker, the Dynamic Profiler, and the Dynamic Tracer. They work in conjunction with your C compiler to provide run-time error checking, statement level profiling, and detailed tracing for C programs.

Classification: Coding, Testing, Quality Assurance, Software Engineering Environment, Coverage/Frequency Analyzer, Debugger, Performance/Timing Analyzer, Run-Time Error Checker

Features:

Languages Supported: C

Configurations: DEC, HP/HP-UX, MIPS, Pyramid, Sun/Sun OS, VAX/VMS

Tool: SAS System

Version:	6.07	Release Date:	1/01/92
Number Sold:	24,295	Single User Price:	(Contact Vendor)
Report Date:	3/18/93	Report Updated:	7/06/94

Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: SAS Institute, Inc.

POC: Joe Totherow
Phone: 919-677-8000 Fax: 919-677-8123
E-mail:
Address: SAS Circle, Box 8000
Cary, NC 27512-8000

Description: The SAS system is a modular integrated "information delivery system" designed to give organizations complete control over their data through control in areas of data access, management, analysis, and presentation.

Classification: Coding, Testing, Project Management, Quality Assurance, Database, Software Engineering Environment, X Communications, Data Extractor, Data Reducer & Analyzer, Performance/Timing Analyzer, Text Editor

Features:

Languages Supported: COBOL

Configurations: UNIX/AIX, UNIX/Domain, UNIX/HP-UX, UNIX/OS, UNIX/Sun OS

Tool: SCAN/COBOL

Version:	--	Release Date:	
Number Sold:	--	Single User Price:	(Contact Vendor)
Report Date:	3/03/93	Report Updated:	5/16/94

Vendor: Computer Data Systems, Inc.

POC: Technical Support
Phone: 301-921-7003 Fax: 301-948-9328
E-mail:
Address: One Curie Ct.
Rockville, MD 20850-4389

Description: SCAN/COBOL is a static analyzer that creates up-to-date documentation, documents control and data flow, reveals overall logic structure, and identifies potential problem areas.

Classification: Coding, Quality Assurance, Reengineering, Auditor, Redocumenter, Reverse Engineering, Structure Checker, Symbolic Execution Tool, Syntax & Semantics Analyzer

Features:

Languages Supported: COBOL

Configurations: IBM

Tool: SCOMPARE

Version:	--	Release Date:	
Number Sold:	--	Single User Price:	(Contact Vendor)
Report Date:	3/18/93	Report Updated:	7/06/94

Vendor: Aldon Computer Group

POC: Technical Support
Phone: 510-839-3535 Fax: 510-839-2894
E-mail:
Address: 401 15th St.
Oakland, CA 94612

Description: SCOMPARE compares files to determine differences.

Classification: Testing, Comparator

Features:

Languages Supported: All

Configurations:

Tool: SCONS
Vendor: Corporate Computer Systems

Version:	1.4	Release Date:	6/22/88	POC:	Tech Support (CCS)		
Number Sold:	--	Single User Price:	$3,000	Phone:	919-677-8000	Fax:	919-677-8123
Report Date:	12/23/92	Report Updated:	7/06/94	E-mail:			
				Address:	SAS Circle, Box 8000		
Evaluation Copy Available					Cary, NC 27512-8000		

Description: SCONS provides tools necessary to cope with change control including changes to program source, test data, and documentation and reports. SCONS includes the powerful DELTA comparator program.
Classification: Testing, Configuration Management, Comparator
Features:
Languages Supported: --
Configurations: HP

Tool: SE/One
Vendor: Software Eclectics, Inc.

Version:	--	Release Date:	1/01/93	POC:	Stephen N. Mills		
Number Sold:	--	Single User Price:	$290	Phone:	800-457-3113	Fax:	404-667-9417
Report Date:	11/08/93	Report Updated:	5/16/94	E-mail:			
				Address:	163 Norcross St.		
					Alpharetta, GA 30201-1970		

Description: SE/One analyze Cobol programs.
Classification: Coding, Testing, Quality Assurance, Reengineering, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: MS Windows

Tool: SEDIT.DB
Vendor: Allen Systems Group

Version:		Release Date:	1/01/92	POC:	Kim Brooks		
Number Sold:	--	Single User Price:	$18,700 group 20	Phone:	800-93-ALLEN	Fax:	813-263-3692
Report Date:	12/21/92	Report Updated:	7/06/94	E-mail:			
				Address:	750 11th St.		
		Site License Available			Naples, FL 33940		

Description: SEDIT.DB is a DB2 application development tool, facilities of which include a full function DB2 table editor, DB2 object creation and cloning, copy data facility, Table Load/Unload and embedded SOL testing.
Classification: Coding, Testing, Database, Data Extractor, Test Data Generator, Test Execution Manager
Features:
Languages Supported: COBOL
Configurations: Mainframe

Tool: SEDIT.MVS
Vendor: Allen Systems Group

Version:	--	Release Date:	1/01/92	POC:	Kim Brooks		
Number Sold:	--	Single User Price:	$15,300 group 20	Phone:	800-932-5536	Fax:	813-263-3692
Report Date:	1/26/93	Report Updated:	7/06/94	E-mail:			
				Address:	750 11th St.		
		Site License Available			Naples, FL 33940		

Description: SEDIT.MVS provides the user the ability to browse/edit VSAM, ESDS, KSDS, and RRDS files. In addition, SEDIT.MVS maintains an audit log showing all file changes and acts as a recovery mechanism.
Classification: Coding, Testing, Configuration Management, Quality Assurance, Data Extractor, Test Execution Manager
Features:
Languages Supported: COBOL
Configurations: Mainframe

Tool: SEEK

Version:		Release Date:			
Number Sold:	1,200+	Single User Price:	(Contact Vendor)		
Report Date:	1/26/93	Report Updated:	5/16/94		
Training Available		Newsletter Available			
Evaluation Copy Available		Site License Available			

Vendor: Advanced Programming Techniques

POC:	Richard Hadley		
Phone:	+44 270 625532	Fax:	+44 270 626665
E-mail:			
Address:	The Rookery, 125 Hospital St. Nantwich Cheshire, CW5 5SA UK		

Description: Seek is a tool that will test and debug under MVS, DOS, VSE, FOR, BATCH, and CICS using COBOL/II, Assembler, PL/1.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Auditor, Case-Based Reasoning, Debugger
Features:
Languages Supported: Assembler, COBOL, PL/1
Configurations: IBM, PC/MS-DOS

Tool: SEER

Version:	4.0	Release Date:			
Number Sold:	–	Single User Price:	$10,800		
Report Date:	5/10/94	Report Updated:	7/06/94		

Vendor: Galorath Associates, Inc.

POC:	Don McKibben		
Phone:	310-670-3404	Fax:	310-670-6481
E-mail:			
Address:	P.O.Box: 90579 Los Angeles, CA 90009		

Description: SEER is a family of products. It contains hardware estimation, software size estimation, software cost and schedule estimation, and integrate circuit.
Classification: Design, Coding, Testing, Project Management, Quality Assurance, Metrics, Reengineering, Code Generator, Defect/Change Tracker, Maintainability Analyzer, Optimizer, Reliability Analyzer, Reverse Engineering, Size Measurer, Structure Checker
Features: SLOC Estimates
Languages Supported: C, FORTRAN
Configurations: PC

Tool: SHOWDIFF

Version:	–	Release Date:			
Number Sold:	–	Single User Price:	(Contact Vendor)		
Report Date:	3/18/93	Report Updated:	7/06/94		

Vendor: NOI Systems

POC:	Technical Support		
Phone:	305-523-6206	Fax:	–
E-mail:			
Address:	1942 Broadway, Suite 313 Boulder, CO 80302		

Description: SHOWDIFF compares files and shows the differences between them.
Classification: Coding, Testing, Comparator
Features:
Languages Supported: All
Configurations: HP-3000

Tool: SimCASE - Simulator/Debugger (SimCASE)

Version:	–	Release Date:			
Number Sold:	–	Single User Price:	(Contact Vendor)		
Report Date:	3/18/93	Report Updated:	7/06/94		

Vendor: Intel Corp.

POC:	Technical Support		
Phone:	310-670-3404	Fax:	310-670-6481
E-mail:			
Address:	P.O.Box: 90579 Los Angeles, CA 90009		

Description: SimCASE is a simulator engine that simulates MCS-51 instruction sets, on-chip I/O, and timers. It is also a C source-level assembler, performance analyzer, and input stimulus generator.
Classification: Coding, Testing, Assembler, Debugger, Environmental Simulator, Instruction Simulator, Performance/Timing Analyzer
Features:
Languages Supported: Assembler, C
Configurations: PC/MS-DOS

Tool: size
Vendor: Digital Equipment Corp.

Version:		Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-344-4825	Fax:	603-881-2381
Report Date:	3/18/93	Report Updated:	7/06/94	E-mail:			
Training Available				Address:	146 Mairr St. Maynard, MA 01754-2571		

Description: size computes source code size metrics.
Classification: Coding, Quality Assurance, Reengineering, Size Measurer
Features: SLOC Actuals
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: Size Planner
Vendor: QSM Associates, Inc.

Version:	1.0	Release Date:	1/01/88	POC:	Michael C. Mah		
Number Sold:	200+	Single User Price:	(Contact Vendor)	Phone:	413-499-0988	Fax:	413-447-7322
Report Date:	10/05/93	Report Updated:	7/06/94	E-mail:			
Training Available		Newsletter Available		Address:	8 Meadow Ridge Pittsfield, MA 01201		
Evaluation Copy Available		Site License Available					

Description: The QSM Size Planner tool estimate the size of a software development, porting, or maintenance release in Function Points or Source Lines Code.
Classification: Coding, Project Management, Configuration Management, Metrics, Reengineering, Size Measurer
Features: Functions Points, SLOC Estimates
Languages Supported: All
Configurations: IBM

Tool: SLEUTH
Vendor: Computer Data Systems, Inc.

Version:	–	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	301-921-7003	Fax:	301-948-9328
Report Date:	3/18/93	Report Updated:	7/06/94	E-mail:			
				Address:	One Curie Ct. Rockville, MD 20850-4389		

Description: SLEUTH is a dynamic testing tool used to monitor the thoroughness of the test run reporting on sections of the program that have not been tested.
Classification: Testing, Quality Assurance, Coverage/Frequency Analyzer
Features:
Languages Supported: COBOL
Configurations:

Tool: Slice Tool
Vendor: McCabe & Assoc., Inc.

Version:		Release Date:	1/01/92	POC:	Tim McCabe		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	800-634-0150	Fax:	410-995-1528
Report Date:	6/06/91	Report Updated:	7/06/94	E-mail:			
				Address:	5501 Twin Knolls Rd., Suite 111 Columbia, MD 21045		

Description: The McCabe Slice Tool identifies the path and code associated with a transaction. It also identifies redundant and reusable code.
Classification: Requirements Trace, Design, Coding, Requirements Analysis, Testing, Quality Assurance, Reuse, Coverage/Frequency Analyzer, Debugger, Reusable Components Identifier, Structure Checker
Features:
Languages Supported: All
Configurations: UNIX, Apollo, HP, PC/MS-DOS, SGraphics, VAX/VMS

Tool: SmallTalk-80
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 3/18/93 Report Updated: 6/01/94

Vendor: ParcPlace Systems
POC: Technical Support
Phone: 415-691-6741 Fax: –
E-mail:
Address: 999 E Arques
Sunny Vale, CA 94086

Description: SmallTalk-80 is a customizable software development environment that contains components necessary for the rapid development of object-oriented systems.
Classification: Design, Coding, Testing, Documentation, Configuration Management, Reengineering, Software Engineering Environment, Compiler, Cross Referencing Tool, Debugger, Language Sensitive Editor, Performance/Timing Analyzer
Features:
Languages Supported: Smalltalk
Configurations: HP, PC/MS-DOS, UNIX

Tool: SMARTcheck
Version: – Release Date:
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 3/18/93 Report Updated: 7/06/94
Training Available
Site License Available

Vendor: ProCASE Corp.
POC: Mark A. Schmidt
Phone: 708-706-3710 Fax: 708-706-3712
E-mail:
Address: 425 N. Martingale Rd., Suite 800
Schaumburg, IL 60173

Description: SMARTcheck helps users be certain that consistency and compatibility are included between existing software and the enhancements and changes made as part of the maintenance process. Features include CPP expansion and consistency checking.
Classification: Coding, Testing, Documentation, Quality Assurance, Metrics, Reengineering, Reuse, Software Engineering Environment, Cross Referencing Tool, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: UNIX, DEC, HP, IBM, Sun

Tool: SMARTsystem
Version: 1.7 Release Date: 4/01/91
Number Sold: 600+ Single User Price: $2,000
Report Date: 2/26/93 Report Updated: 6/01/94
Training Available
Site License Available

Vendor: ProCASE Corp.
POC: Mark A. Schmidt
Phone: 708-706-3710 Fax: 708-706-3712
E-mail:
Address: 425 N. Martingale Rd., Suite 800
Schaumburg, IL 60173

Description: SMARTsystem is a software reverse engineering environment that increases productivity with emphasis on such areas as comprehension, maintenance, and software evolution.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Reuse, Software Engineering Environment, Forward Engineering, Redocumenter, Reverse Engineering, Syntax & Semantics Analyzer
Features: Automatic Documentation Generation
Languages Supported: C
Configurations: UNIX, Apollo/UNIX, DEC/UNIX, HP/HP-UX, HP/UNIX, IBM/AIX, MIPS, NCR, RISC 6000, Sun/Sun OS

Tool: Soft-ICE
Version: 2.5 Release Date: 1/01/87
Number Sold: – Single User Price: $386
Report Date: 12/28/92 Report Updated: 7/06/94

Vendor: Nu-Mega Technologies
POC: Scott Gagnone
Phone: 603-889-2386 Fax: 603-889-1135
E-mail:
Address: PO Box 7780
Nashua, NH 03060-7607

Description: Soft-ICE is a debugger specifically designed to handle the unique debugging chores of the MS-DOS world. It identifies problems that wouldn't exist with a protected operating systems.
Classification: Coding, Testing, Quality Assurance, Debugger, Run-Time Error Checker
Features:
Languages Supported: C
Configurations: PC/MS-DOS

Tool: SOFTTEST
Version: 4.0 Release Date: 3/01/92
Number Sold: 200 Single User Price: $2,500
Report Date: 1/06/93 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Bender & Assoc., Inc.
POC: Blaine Bragg
Phone: 603-889-2386 Fax: 603-889-1135
E-mail:
Address: PO Box 7780
Nashua, NH 03060-7607

Description: SOFTTEST performs requirements validation, verification of design and code, generates test cases, manages the test library, and performs project management functions.
Classification: Requirements Trace, Design, Requirements Analysis, Testing, Documentation, Project Management, Quality Assurance, Reengineering, Requirements-Based Test Case Generator, Test Execution Manager
Features:
Languages Supported: All
Configurations: PC/MS-DOS

Tool: Software Analysis Test Tool
Version: – Release Date:
Number Sold: – Single User Price: $6,005
Report Date: 12/23/92 Report Updated: 7/06/94

Vendor: Intl. Business Machines Corp.
POC: Technical Support
Phone: 801-328-6763 Fax: 801-328-6692
E-mail:
Address: 420 E. So. Temple
Salt Lake City, UT 84111-1391

Description: Software Analysis Test Tool furnishes a graphical display of the execution flow of the running program. It supports interactive browsing, query, and test coverage information reports.
Classification: Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer, Test Data Generator, Test Execution Manager
Features:
Languages Supported: C, COBOL, COBOL II, PL/1, RPG
Configurations: IBM/OS/2

Tool: Software One Exchange
Version: 1.7C Release Date:
Number Sold: 35 Single User Price: $20K
Report Date: 2/04/93 Report Updated: 7/06/94
Training Available
Site License Available

Vendor: Software One, Ltd.
POC: Kay Paine
Phone: 508-486-8922 Fax: –
E-mail:
Address: Kay Paine Assoc, 2 Lake Warren Dr.
Littleton, MA 01460

Description: Software One Exchange is a linker interface between third party upper CASE tools, Repositories/Data dictionaries, and application generators. Input information is decoded into a generic format, validated, then encoded for the target environment.
Classification: Design, Reengineering, Retargeting, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: C
Configurations: OS/2, IBM, PC/MS-DOS, UNIX

Tool: Software Quality Analysis Module
Version: 3.1 Release Date: 8/01/93
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/21/93 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Advanced Software Automation, Inc.
POC: Technical Support
Phone: 508-486-8922 Fax: –
E-mail:
Address: Kay Paine Assoc, 2 Lake Warren Dr.
Littleton, MA 01460

Description: Software Quality Analysis Module allows you to focus on the quality of your code from several vantage points. Eight quality-analysis metrics are available. You can view these metrics on a Kiviat Diagram, a weighted Metric Chart, or in a report.
Classification: Coding, Testing, Documentation, Quality Assurance, Reengineering, Complexity Measurer, Defect/Change Tracker, Maintainability Analyzer, Reliability Analyzer, Size Measurer
Features: SLOC Actuals
Languages Supported: C, C++, FORTRAN
Configurations: Solaris2.1, HP/UNIX, IBM/AIX, Sun/Sun OS

Tool: Software Refinery
Version: 4.0 Release Date: 4/03/91
Number Sold: – Single User Price: $19,600
Report Date: 2/04/93 Report Updated: 5/10/94
Training Available
Evaluation Copy Available

Vendor: Reasoning Systems, Inc.
POC: Paul H. Davis
Phone: 415-494-6201 Fax: 415-494-8053
E-mail: sales@reasoning.com
Address: 3260 Hillview Ave.
Palo Alto, CA 94034

Description: Software Refinery is a family of products for building automated software processing tools that analyzes and redocuments old code, converts to new languages, checks code against programming standards, and generates test cases from source code.
Classification: Coding, Testing, Documentation, Reengineering, Reuse, Auditor, Forward Engineering, Redocumenter, Restructurer, Reverse Engineering, Source Code Translator, Test Data Generator
Features:
Languages Supported: Ada, BAL, C, COBOL, FORTRAN, JCL, Natural, SQL
Configurations: HP, IBM/AIX, Sun/Sun OS

Tool: Software through Pictures (StP)
Version: – Release Date: 1/01/93
Number Sold: – Single User Price: $4,000+
Report Date: 3/19/93 Report Updated: 6/14/94

Vendor: Interactive Development Environments
POC: Andy Simmons
Phone: 800-888-4331 Fax: 415-543-0145
E-mail:
Address: 595 Market St. 10th Fl.
San Francisco, CA 94105

Description: OO application development tool. Features object, dynamic and functional model graphical/textual creation/editing, commercial database repository, integrated model checking and navigation, intramodel checking, C++ code generation capabilities and export capabilities to Interleaf, FrameMaker, and Postscript.
Classification: Design, Requirements Analysis, Reengineering, Software Engineering Environment, Code Generator, Reverse Engineering, Structure Checker
Features:
Languages Supported: Ada, C++
Configurations: Apollo, DEC/ULTRIX, DEC/VMS, HP, Sun/Sun OS

Tool: Source Code Analyzer (SCA)
Version: 3.1 Release Date: 2/01/93
Number Sold: 3 Single User Price: $5k-$15K
Report Date: 12/27/93 Report Updated: 5/16/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Interlex
POC: Bob Snyder
Phone: 310-472-7001 Fax: –
E-mail:
Address: 446 N. Bowling Green Way
Los Angeles, CA 90049

Description: SCA is an interactive tool for the examination and analysis of source code. It provides fast, direct access to the source code corresponding to specified occurrence of program symbols. Set-used lists, invocation trees, call paths, and other summaries.
Classification: Design, Coding, Reengineering, Cross Referencing Tool, Reverse Engineering
Features: Code Browser
Languages Supported: CMS-2, JOVIAL
Configurations: PC/MS-DOS, PC/UNIX, Sun/Sun OS, VAX/ULTRIX, VAX/VMS

Tool: Source Program Compare
Version: 2.2 Release Date: 9/01/90
Number Sold: 290 Single User Price: $495 site licen.
Report Date: 12/28/92 Report Updated: 5/16/94
Evaluation Copy Available Site License Available

Vendor: MacKinney Systems
POC: Tech. Support (MS)
Phone: 417-882-8012 Fax: 417-882-7569
E-mail:
Address: 2740 S. Glenstone, Suite 103
Springfield, MO 65804

Description: Source Program Compare compares two versions of a program and prints a listing showing all of the differences.
Classification: Coding, Testing, Documentation, Quality Assurance, Software Engineering Environment, Comparator
Features:
Languages Supported: Assembler, COBOL, PL/1, RPG
Configurations: VMS, IBM/VSE

Tool: Source/RE
Vendor: CGI Systems, Inc.

Version: 1.30 | Release Date: 4/01/92
Number Sold: 100 | Single User Price: (Contact Vendor)
Report Date: 4/09/93 | Report Updated: 7/06/94

POC: Dick Ramsdell
Phone: 800-722-1866 Fax: 914-735-2231
E-mail:
Address: One Blue Hill Plaza, PO Box 1645
Pearl River, NY 10965

Description: Source/RE analyze traditionally developed business applications programs. It furnishes a high-level view of COBOL source code and JCL flow in the form of graphics on a IBM compatible PC.
Classification: Coding, Reengineering, X Analysis, Complexity Measurer, Cross Referencing Tool, Redocumenter, Reverse Engineering, Structure Checker
Features:
Languages Supported: CICS, COBOL, JCL
Configurations: IBM compatible 640K RAM/ Hard Drive

Tool: SPQR SIZER/FP Function Point Calculator (SIZER/FP)
Vendor: Software Productivity Research, Inc.

Version: – | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 3/22/93 | Report Updated: 5/24/94

POC: Lynne Caramanica
Phone: 617-273-0140 Fax: 617-273-5176
E-mail:
Address: 1 New England Executive Park
Burlington, MA 01803-5005

Description: SIZER/FP is a supporting product that provides a template that automates calculation of IBM function point parameters, and can be used for prediction of source code needed on new projects or updating existing programs.
Classification: Project Management, Quality Assurance, Metrics, Size Measurer
Features: Function Points, SLOC Estimates
Languages Supported: –
Configurations: IBM

Tool: SPQR/20 Estimator (SPQR/20)
Vendor: Software Productivity Research, Inc.

Version: – | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 3/22/93 | Report Updated: 5/24/94

POC: Technical Support
Phone: 617-273-0140 Fax: 617-273-5176
E-mail:
Address: 1 New England Executive Park
Burlington, MA 01803-5005

Description: SPQR/20 studies feasibility, scheduling, and estimated cost of planned software projects. It gives quick, up-front evaluation and has strong quality assurance capabilities as well as detailed risk analysis to warn of possible hazards.
Classification: Project Management, Quality Assurance, Metrics, Size Measurer
Features: SLOC Actuals
Languages Supported: All
Configurations: IBM

Tool: SQA TeamTest
Vendor: Software Quality Automation

Version: 2.5 | Release Date: 12/01/93
Number Sold: 3,000+ | Single User Price: $1,495
Report Date: 12/23/93 | Report Updated: 7/06/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

POC: Edward J. Gaudet
Phone: 617-932-3280 Fax: 617-932-0110
E-mail:
Address: 10 State St.
Woburn, MA 01801

Description: SQA TeamTest, provides a team testing architecture built on a networked test repository that coordinates the work of everyone concerned with GUI application quality, including developers, testers, writers, and support personnel.
Classification: Testing, Quality Assurance, Capture-Replay Tool, Code Generator, Comparator, Defect/Change Tracker, Functional Simulator, Test Execution Manager, Test Planner
Features: GUI-based Testing
Languages Supported: All
Configurations: Windows, IBM/OS/2

Tool: SQLASSIST

Version:	3.1	Release Date:	3/01/92		
Number Sold:	300	Single User Price:	$Per CPU 2K-20K		
Report Date:	2/17/93	Report Updated:			
Training Available		Newsletter Available			
Evaluation Copy Available		Site License Available			

Vendor: Software Interfaces, Inc.

POC: Rahul Mehta
Phone: 713-492-0707 Fax: 713-492-0725
E-mail:
Address: 1400 Broadfield, Suite 660, Pk 10
Houston, TX 77084

Description: SQLASSIST allows all levels of users to build ad hoc queries, view query data, create true-columnar or matrix reports, and convert database data to other file formats including RS1, SAS, Lotus, and MASS 11.
Classification: Coding, Testing, Reengineering, Database, Data Extractor, Data Reengineering, Syntax & Semantics Analyzer
Features:
Languages Supported: DBMS
Configurations: DEC/ULTRIX, HP, Mac, PC, RISC 6000, Sun, VAX/VMS

Tool: Static Analysis Tool Set (SATS)

Version:	–	Release Date:			
Number Sold:	–	Single User Price:	(Contact Vendor)		
Report Date:	1/27/93	Report Updated:	6/08/94		

Vendor: LOGICON, Inc.

POC: Technical Support
Phone: 703-486-3500 Fax: 703-979-0260
E-mail:
Address: 2100 Washington Blvd.
Arlington, VA 22204

Description: STATS, is a set of automated tools developed on the Rational R 1000 system.
Classification: Coding, Reengineering, Reuse, Reusable Components Identifier, Syntax & Semantics Analyzer
Features:
Languages Supported: --
Configurations: Rational

Tool: STATUS

Version:	–	Release Date:			
Number Sold:	–	Single User Price:	(Contact Vendor)		
Report Date:	3/23/93	Report Updated:	7/06/94		

Vendor: Advanced Systems Concepts, Inc.

POC: Jack Edelman
Phone: 201-798-6400 Fax: 201-798-9203
E-mail:
Address: 33-41 Newark St.
Hoboken, NJ 07030

Description: STATUS allows you to determine who is using your system and how much capacity remains. It also has the feature to set up charges for people who use your computer. STATUS is primarily for system tuning, not for testing application performance information.
Classification: Testing, Performance/Timing Analyzer, Status Displayer
Features:
Languages Supported: --
Configurations: AS/400, SYSTEM 38

Tool: StP/T

Version:	4.0	Release Date:	6/02/93		
Number Sold:	500+	Single User Price:	$12,000		
Report Date:	3/02/93	Report Updated:	7/07/94		
Training Available		Newsletter Available			
Evaluation Copy Available		Site License Available			

Vendor: Interactive Development Environments

POC: Greg Neal
Phone: 800-888-4331 Fax: 415-543-0145
E-mail:
Address: 595 Market St. 10th Fl.
San Francisco, CA 94105

Description: StP/T is integrated with the IDE product family (OMT, SE, IM) to automatically extract test information from development models and create specification-based test cases. Stp/T generates high-quality test cases and is integrated with popular capture/replay tools for test case execution. The T tool was originally developed by Programming Environment.
Classification: Requirements Trace, Requirements Analysis, Testing, Quality Assurance, Reengineering, Reuse, Requirements-Based Test Case Generator, Test Data Generator
Features:
Languages Supported:
Configurations: DEC, HP, IBM, Sun

Tool: STROBE
Vendor: Programart Corp.

Version:	--	Release Date:		POC:	Alexander J. Salop		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	617-661-3020	Fax:	617-864-6558
Report Date:	3/24/93	Report Updated:	5/16/94	E-mail:			
				Address:	124 Mount Auburn St, Suite 240S Cambridge, MA 02138		

Description: STROBE is a software product that measures system resources used by an application program or on-line system. STROBE uncovers performance bottlenecks and inefficient coding in applications.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: CICS, COBOL, DB2, IDMS
Configurations: IBM/MVS

Tool: Structure & Logic Analysis Module
Vendor: Advanced Software Automation, Inc.

Version:	3.1	Release Date:	8/01/93	POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	617-661-3020	Fax:	617-864-6558
Report Date:	12/21/93	Report Updated:	7/07/94	E-mail:			
Training Available				Address:	124 Mount Auburn St, Suite 240S		
Evaluation Copy Available		Site License Available			Cambridge, MA 02138		

Description: Structure & Logic Analysis Module generates a hierarchical structure chart directly from source code. This chart helps you understand the calling relationships between parent and child functions. From this high-level structure display, you can open diagrams and trace the logic flow.
Classification: Design, Coding, Documentation, Reengineering, Software Engineering Environment, Complexity Measurer, Cross Referencing Tool, Redocumenter, Structure Checker
Features:
Languages Supported: C, C++, FORTRAN
Configurations: Solaris2.1, HP/UNIX, IBM/AIX, Sun/Sun OS

Tool: STW/Advisor
Vendor: Software Research, Inc.

Version:		Release Date:		POC:	Ron Steffen		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	415-057-1441	Fax:	415-957-0730
Report Date:	7/01/93	Report Updated:	7/07/94	E-mail:	steffen@soft.com		
Training Available		Newsletter Available		Address:	625 3rd St.		
Evaluation Copy Available		Site License Available			San Francisco, CA 94107-1997		

Description: STW/Advisor provides tools for establishing and measuring quality benchmarks with metrics and for analyzing source code for anomalies with static analysis. Consists of METRIC, STATIC, and TDGEN.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Size Measurer, Syntax & Semantics Analyzer, Test Data Generator
Features: SLOC Actuals
Languages Supported: Ada, C, C++, FORTRAN
Configurations: Solaris2.1, DECstation/OSF/1, HP/HP-UX, PC/MS-DOS, RISC 6000/AIX, SGraphics, Sun/Sun OS

Tool: STW/Coverage
Vendor: Software Research, Inc.

Version:		Release Date:		POC:	Ron Steffen		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	415-057-1441	Fax:	415-957-0730
Report Date:	7/01/93	Report Updated:	7/07/94	E-mail:	steffen@soft.com		
Training Available		Newsletter Available		Address:	625 3rd St.		
Evaluation Copy Available		Site License Available			San Francisco, CA 94107-1997		

Description: The STW/Coverage is a set of tools for coverage analysis to assure test cases thoroughly exercise your program in as many way as possible. The collected data will advise you if additional testing is needed. Consists of: TCAT, TCAT-PATH, T-SCOPE, S-TCAT.
Classification: Coding, Testing, Quality Assurance, Reengineering, Coverage/Frequency Analyzer, Structure Checker
Features:
Languages Supported: Ada, C, C++, COBOL, FORTRAN
Configurations: Apollo/Domain, HP/HP-UX, PC/MS-DOS, PC/Windows, RISC 6000/AIX, SGraphics, Sun/Sun OS

Tool: STW/Regression

Version: | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 7/01/93 | Report Updated: 7/07/94
Training Available | Newsletter Available
Evaluation Copy Available | Site License Available

Vendor: Software Research, Inc.

POC: Ron Steffen
Phone: 415-057-1441 Fax: 415-957-0730
E-mail: steffen@soft.com
Address: 625 3rd St.
San Francisco, CA 94107-1997

Description: The STW/Regression is a set of tools to automate the testing process. Capture/Playback capabilities and test management are part of the STW/Regression package. Consists of: CAPBAK/X, EXDIFF, and SMARTS.

Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Comparator, Session Documenter, Test Execution Manager, Test Planner

Features: GUI-based Testing, Text-based Testing

Languages Supported: All

Configurations: DECstation/ULTRIX, HP/HP-UX, PC/MS-DOS, PC/Windows, RISC 6000/AIX, SGraphics, Sun/Sun OS

Tool: superCASE (SCI)

Version: – | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 1/06/93 | Report Updated:

Vendor: Advanced Technology Intl., Corp.

POC: Gonen Ziv
Phone: 415-057-1441 Fax: 415-957-0730
E-mail: steffen@soft.com
Address: 625 3rd St.
San Francisco, CA 94107-1997

Description: SuperCASE is an integrated environment supporting top-level design to maintenance. It creates design abstractions from code and facilitates ongoing maintenance and enhancement. It is a reverse engineering tool that extracts design information.

Classification: Design, Coding, Documentation, Reengineering, Cross Referencing Tool, Forward Engineering, Language Sensitive Editor, Reverse Engineering

Features:

Languages Supported: Ada, C, FORTRAN, JOVIAL, PL/M

Configurations: DEC/CMS, VAX/VMS

Tool: SUPRe/DAISys

Version: 1.4 | Release Date: 8/01/93
Number Sold: 32 sites | Single User Price: $18,000
Report Date: 4/07/93 | Report Updated: 7/07/94
Training Available | Newsletter Available
Site License Available

Vendor: S-CUBED, Inc.

POC: John A. Rade
Phone: 203-323-0760 Fax: 203-323-2007
E-mail:
Address: 1010 Washington Blvd.
Stamford, CT 06901

Description: The SUPRe/DAISys product allows the user to generate code from the same set of requirements driven specifications, provide a complete functional simulation of the system before code is generated, and much more. It uses an Expert System and OO techniques.

Classification: System Simulation, Requirements Trace, Design, Coding, Requirements Analysis, Testing, Documentation, Project Management, Configuration Management, Quality Assurance, Reengineering, Reuse, Database, Software Engineering Environment, AI, Case-Based Reasoning, Commenter, Cross Referencing Tool, Forward Engineering, Frame-Based Shell, Reusable Components Identifier

Features:

Languages Supported: C, COBOL, SQL

Configurations: PC single user with single repository or multiuser with hared lan-based repository

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Tool: SVS Automated Software Testing

Version: – | Release Date:
Number Sold: – | Single User Price: (Contact Vendor)
Report Date: 3/24/93 | Report Updated: 7/07/94

Vendor: B-TREE SOFTWARE, Inc.

POC: Technical Support
Phone: 612-474-3756 Fax: 612-474-5920
E-mail:
Address: 17815 Hutchins Dr.
Minnetonka, MN 55345

Description: SVS allows the user to design test requirements and test cases, participate in design reviews, create free-form tests, and define test coverage points and design rules.

Classification: Testing, Capture-Replay Tool, Coverage/Frequency Analyzer, Emulator, Test Data Generator

Features:

Languages Supported: --

Configurations: PC

Tool: SyncTrac
Vendor: SERENA, Inc.

Version:	3.2	Release Date:	10/01/92	POC:	Technical Support		
Number Sold:	10	Single User Price:	(Contact Vendor)	Phone:	415-696-1800	Fax:	415-696-1776
Report Date:	12/29/92	Report Updated:	7/07/94	E-mail:			
		Newsletter Available		Address:	500 Airport Blvd., 2nd Fl., Box 117039		
Evaluation Copy Available					Burlingame, CA 94011-7039		

Description: SyncTrac is a automated MVS software environment synchronization and data set change tracking facility to synchronize maintenance and test to production volumes.
Classification: Testing, Configuration Management, Quality Assurance, Defect/Change Tracker
Features:
Languages Supported: --
Configurations: IBM/MVS

Tool: T
Vendor: Interactive Development Environments

Version:	2.3	Release Date:	6/01/91	POC:	Greg Neal		
Number Sold:	300+	Single User Price:	$7,000	Phone:	800-888-4331	Fax:	415-543-0145
Report Date:	12/28/92	Report Updated:	3/29/94	E-mail:			
Training Available		Newsletter Available		Address:	595 Market St. 10th Fl.		
Evaluation Copy Available					San Francisco, CA 94105		

Description: T verifies requirements testability and generates specification-based test cases. Its primary functions are to verify that requirements are testable and generate specification-based test cases from those requirements.
Classification: Requirements Trace, Requirements Analysis, Testing, Quality Assurance, Reengineering, Reuse, Requirements-Based Test Case Generator
Features:
Languages Supported: --
Configurations: SPARC, Apollo, AT&T 3B2/UNIX, Gould/UNIX, HP/UNIX, PC/MS-DOS, PC/UNIX, Sun/Sun OS, VAX/UNIX, VAX/VMS

Tool: TAGS Case2
Vendor: Teledyne Brown Engineering

Version:		Release Date:		POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-633-4675	Fax:	205-726-3414
Report Date:	5/11/92	Report Updated:	5/26/94	E-mail:			
				Address:	300 Sparkmand Dr., M/S 202		
					Huntsville, AL 35807-7007		

Description: TAGS, Tech. for the Automated Generation of Systems is a fully integrated Computer-Aided Software/Systems Engineering environment.
Classification: System Simulation, Requirements Analysis, Documentation, Syntax & Semantics Analyzer
Features:
Languages Supported: --
Configurations: Apollo, DEC/ULTRIX, IBM, Sun/Sun OS

Tool: TBGEN
Vendor: Testwell Oy

Version:	4.0	Release Date:	10/01/91	POC:	Technical Support		
Number Sold:	--	Single User Price:	$2,850	Phone:	+358-31-165464	Fax:	+358-31-183311
Report Date:	1/28/93	Report Updated:	5/26/94	E-mail:			
				Address:	Kanslerinkatu 8		
Evaluation Copy Available					SF-33720 Tampere, FINLAND		

Description: TBGEN is a state-of-the-art testing tool facilitating efficient black-box testing of Ada modules and subsystems, usage of sound testing principles, and better management and visibility of the testing work.
Classification: Testing, Test Execution Manager
Features:
Languages Supported: Ada
Configurations: Apollo, IBM/OS/2, PC/MS-DOS, Rational, Sun/Sun OS, VAX/VMS

Tool: TCMON
Version: 2.2 Release Date: 12/01/87
Number Sold: -- Single User Price: $2,300
Report Date: 1/27/93 Report Updated: 7/07/94
Evaluation Copy Available

Vendor: Testwell Oy
POC: Technical Support
Phone: +358-31-165464 Fax: +358-31-183311
E-mail:
Address: Kanslerinkatu 8
SF-33720 Tampere, FINLAND

Description: TCMON is based on the instrumentation technique. TCMON provides dynamic analysis of Ada code. It uses test coverage (statement, condition, subcondition), execution counters, analysis, and execution cost analysis per subprogram or user defined code points.
Classification: Coding, Testing, Metrics, Reengineering, Complexity Measurer, Coverage/Frequency Analyzer
Features: Insturmenter
Languages Supported: Ada
Configurations: IBM/OS/2, PC/MS-DOS, Rational, Sun/Sun OS, VAX/VMS

Tool: Teamwork/Ada
Version: 4.0 Release Date: 1/31/91
Number Sold: 5,000+ Single User Price: $2,775
Report Date: 1/05/93 Report Updated:
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Cadre Technologies, Inc.
POC: Doug Trolan
Phone: 800-743-2273 Fax: 408-727-1163
E-mail:
Address: 2880 Lakeside Dr., Suite 231
Santa Clara, CA 95054

Description: Teamwork/Ada provides the capability to draw, edit, and check Ada Structure Graphs. It maps the semantics of the Ada language to a graphical Ada structure. It also supports information hiding by offering selective viewing of data.
Classification: Design, Coding, Requirements Analysis, Documentation, Reengineering, Reuse, Software Engineering Environment, Reusable Components Identifier, Structure Checker
Features:
Languages Supported: C++
Configurations: Domain, DEC/ULTRIX, HP/HP-UX, HP/VMS, IBM/AIX, Sun/Sun OS

Tool: Teamwork/TestCase
Version: 4.0 Release Date: 11/01/91
Number Sold: 20+ Single User Price: $8,000
Report Date: 12/22/92 Report Updated:
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Cadre Technologies, Inc.
POC: Doug Trolan
Phone: 800-743-2273 Fax: 408-727-1163
E-mail:
Address: 2880 Lakeside Dr., Suite 231
Santa Clara, CA 95054

Description: TestCase provides automatic requirements test case generation. It generates unit test cases from structure charts and data dictionary entries in the Teamwork/SA/SD Project Database.
Classification: Requirements Trace, Requirements Analysis, Testing, Quality Assurance, Requirements-Based Test Case Generator
Features:
Languages Supported: --
Configurations: UNIX workstations (Sun, DEC, HP, IBM), DEC VMS and OS/2-based machines

Tool: TeleGen2 Ada
Version: 4.1 Release Date: 12/01/91
Number Sold: -- Single User Price: $20K-$95K
Report Date: 2/04/93 Report Updated:
Training Available Newsletter Available
Evaluation Copy Available Site License Available

Vendor: Telesoft.(Owned by Alsys)
POC: Technical Support
Phone: 619-457-2700 Fax: 619-452-1334
E-mail:
Address: 5959 Cornerstone Court W.
San Diego, CA 92121-9891

Description: TeleGen2 is a programming environment that includes an Ada compiler, debugger, emulator, profiler, and library manager. It also features a very fast run-time environment with networking and real-time support for embedded targets.
Classification: Coding, Testing, Reengineering, Software Engineering Environment, Compiler, Cross Compiler, Cross Referencing Tool, Debugger, Emulator, Status Displayer
Features:
Languages Supported: Ada
Configurations: Any VAX (VMS Ver. 5.0), 680X0, 80X86, 1750A, MIPS Processors

Tool: Test Coverage Analysis Module
Vendor: Advanced Software Automation, Inc.

Version:	3.1	Release Date:	8/01/93	POC:	Technical Support		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	800-743-2273	Fax:	408-727-1163
Report Date:	3/03/93	Report Updated:	7/07/94	E-mail:			
Training Available				Address:	2880 Lakeside Dr., Suite 231		
Evaluation Copy Available		Site License Available			Santa Clara, CA 95054		

Description: Test Coverage Analysis Module provides unique test coverage and test planning analysis capabilities. TCA identifies tested and untested code, including invisible segments and loop boundary conditions.
Classification: Requirements Trace, Testing, Documentation, Assertion Analyzer, Coverage/Frequency Analyzer, Test Instrumenter, Test Planner
Features:
Languages Supported: C, C++, FORTRAN
Configurations: Solaris2.1, HP/UNIX, IBM/AIX, Sun/Sun OS

Tool: Test/Cycle
Vendor: Computer Power Group, Inc.

Version:	3.0	Release Date:	12/01/91	POC:	Tech. Support (CPGI)		
Number Sold:	10	Single User Price:	$7,000	Phone:	602-956-7575	Fax:	602-957-8254
Report Date:	12/22/92	Report Updated:	7/07/94	E-mail:			
Training Available				Address:	5110 N. 40th St.		
		Site License Available			Phoenix, AZ 85018		

Description: Test/Cycle validates the business and technical requirements of a commercial application system throughout its lifecycle. It automates definition and maintenance of builds, test plans, test runs, and test cases and their relationship to requirements.
Classification: Requirements Trace, Design, Testing, Documentation, Project Management, Reengineering, Software Engineering Environment, Test Execution Manager, Test Planner
Features:
Languages Supported: --
Configurations: MS-DOS v3.3+ and Windows

Tool: TESTBED
Vendor: Program Analysers, Ltd.

Version:	4.8	Release Date:	1/12/91	POC:	Alan R. Barker		
Number Sold:	400+	Single User Price:	$12,551	Phone:	0635-528-828	Fax:	0635-528-657
Report Date:	12/28/92	Report Updated:	5/16/94	E-mail:			
		Newsletter Available		Address:	56 Northbrook St.		
					Newbury, Berkshire, RG13 1AN UK		

Description: TESTBED is a set of software analysis tools to statically and dynamically analyze modules including control flow, complexity, data flow, coverage, and assertion violations.
Classification: Coding, Requirements Analysis, Testing, Quality Assurance, Metrics, Reengineering, Assertion Analyzer, Complexity Measurer, Coverage/Frequency Analyzer, Cross Referencing Tool, Debugger, Status Displayer, Structure Checker, Syntax & Semantics Analyzer, Test Execution Manager
Features:
Languages Supported: Ada, C, COBOL, CORAL 86, FORTRAN, Pascal, PL/1, PL/M
Configurations: Apollo/UNIX, CDC/NOS/VE, Gould/UNIX, Honeywell/UNIX, HP/HP-UX, HP/RTEA, IBM/MVS, ICL/GEORGE, ICL/VME, Intel/RMX, ITL/MODUS, ITL/UNIX, Motorola/UNIX, Nixdorf/UNIX, PC/MS-DOS, Pyramid/UNIX, Sequent/DYNIX, Sun/Sun OS, VAX/ULTRIX, VAX/UNIX, VAX/VMS

Tool: TestBench.DM*
Version: 1.5 | Release Date: 7/24/92
Number Sold: -- | Single User Price: $23,400 group 20
Report Date: 1/05/93 | Report Updated: 7/07/94
Site License Available

Vendor: Allen Systems Group
POC: Technical Support
Phone: 800-932-5536 | Fax: 813-263-3692
E-mail:
Address: 750 11th St.
Naples, FL 33940

Description: TestBench.DM* is an integrated on-line tool for creating test databases in an IDMS environment and for performing regression testing. Test Bench. DM* provides isolated, realistic test databases that encompass foreign keys.
Classification: Coding, Testing, Quality Assurance, Reengineering, Capture-Replay Tool, Test Data Generator, Test Execution Manager
Features:
Languages Supported: --
Configurations: Mainframe

Tool: TestCenter
Version: | Release Date: 1/01/93
Number Sold: -- | Single User Price: (Contact Vendor)
Report Date: 12/07/93 | Report Updated: 7/07/94

Vendor: CenterLine Software, Inc.
POC: Dick Burgett
Phone: 703-749-1100 | Fax: 703-749-1108
E-mail: burgett@centerline.com
Address: 7926 Jones Branch Dr., Suite 1000
McLean, VA 22102

Description: TestCenter integrates automatic run-time error detection, leak detection, and graphical test coverage for UNIX C/C++ programmers.
Classification: Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer, Debugger, Run-Time Error Checker, Test Execution Manager
Features:
Languages Supported: C, C++
Configurations: DEC, HP, IBM, Sun/SPARC

Tool: TestGen
Version: 2.1 | Release Date: 5/01/92
Number Sold: 60+ | Single User Price: (Contact Vendor)
Report Date: 12/29/92 | Report Updated: 7/07/94
Evaluation Copy Available | Site License Available

Vendor: Software Systems Design, Inc.
POC: Dr. Thomas S. Radi
Phone: 714-625-6147 | Fax: 714-626-9667
E-mail:
Address: 3627 Padua Ave.
Claremont, CA 91711

Description: TestGen & TestGen/C is made of the Design Review Expert Assist, that readies a software design review for each of the functions & the Unit Test Strategy Generator, that prepares a test procedure for each function. It will report the extent of test coverage.
Classification: Coding, Testing, Quality Assurance, Coverage/Frequency Analyzer, Test Data Generator, Test Execution Manager, Test Planner
Features:
Languages Supported: Ada, C
Configurations: HP/VMS, PC/MS-DOS, RISC 6000, Sun/VMS, UNIX/VMS, VAX/VMS

Tool: TestMate
Version: | Release Date:
Number Sold: -- | Single User Price: (Contact Vendor)
Report Date: 6/08/94 | Report Updated: 7/07/94

Vendor: Rational Software, Corp.
POC: Dudley McBride
Phone: 303-986-2006 | Fax: 303-986-0205
E-mail: dud@rational.com
Address: 165 South Union Blvd., Suite 604
Lakewood, CO 80228

Description: TestMate automates the process of performing, evaluating, and developing functional and structural software tests.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Coverage/Frequency Analyzer, Test Execution Manager
Features:
Languages Supported: Ada
Configurations: IBM/AIX, Rational, Sun/Solaris2.1, Sun/Sun OS

Tool: TestPoint
Vendor: Keithley Instruments, Inc.

Version:		Release Date:	1/01/94	POC:	Technical Support		
Number Sold:	–	Single User Price:	$995	Phone:	508-880-3000	Fax:	508-880-0179
Report Date:	6/13/94	Report Updated:	6/13/94	E-mail:			
				Address:	440 Myles Standish Blvd. Taunton, MA 02780		

Description: A customized test, measurement, or data acquisition application for your software.
Classification: Testing, Quality Assurance, Performance/Timing Analyzer, Run-Time Error Checker
Features:
Languages Supported:
Configurations: Windows, PC/MS-DOS

Tool: TestRunner
Vendor: Mercury Interactive Corp.

Version:	2.03	Release Date:	12/15/91	POC:	Merav Davidson		
Number Sold:	40	Single User Price:	(Contact Vendor)	Phone:	303-986-2006	Fax:	303-986-0205
Report Date:	1/06/93	Report Updated:	7/07/94	E-mail:	dud@rational.com		
Training Available				Address:	165 South Union Blvd., Suite 604		
Evaluation Copy Available		Site License Available			Lakewood, CO 80228		

Description: TestRunner is a software quality assurance workstation designed to automate the process of software testing for interactive software systems.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Debugger, Run-Time Error Checker, Test Execution Manager
Features:
Languages Supported: All
Configurations: Apollo, IBM, Mac/Mac OS, PC/MS-DOS, PC/OS/2, Sun/Sun OS, VAX/VMS

Tool: TrackDeck
Vendor: Dashboard Software

Version:	1.0	Release Date:		POC:	Bracha Epstein		
Number Sold:	–	Single User Price:	$129	Phone:	914-352-8071	Fax:	914-352-8071
Report Date:	11/04/93	Report Updated:	7/07/94	E-mail:			
				Address:	4 Louis Ave. Monsey, NY 10952		

Description: TrackDeck is a visual debugger and historical graphing tool for windows developers. TrackDeck monitors what any variables of a program are doing-in real time as the code executes normally. It also displays values as text, dials, or history graphs. You can catch bugs instantly, see program status information, and solve performance problems. There is also a royalty free run-time version for distribution to end users of your application.
Classification: Coding, Testing, Quality Assurance, Debugger, Performance/Timing Analyzer, Status Displayer
Features:
Languages Supported: Basic, C, C++, Pascal
Configurations: PC

Tool: TREESOFT
Vendor: +1 Software Engineering

Version:	2.1	Release Date:	1/01/90	POC:	John P. Dempsey		
Number Sold:	–	Single User Price:	$6,500	Phone:	805-389-1778	Fax:	805-389-1778
Report Date:	12/22/93	Report Updated:	7/07/94	E-mail:			
Training Available		Newsletter Available		Address:	2510-G Las Posas Rd., Suite 438		
		Site License Available			Camarillo, CA 93011		

Description: TREESOFT can be used over a local area network to support a group of programmers. It supports CM, problem report management, reuse, unit integration, and regression testing.
Classification: Design, Coding, Requirements Analysis, Testing, Documentation, Project Management, Configuration Management, Quality Assurance, Reengineering, Reuse, Database, Software Engineering Environment, Coverage/Frequency Analyzer, Cross Referencing Tool, Defect/Change Tracker, Performance/Timing Analyzer, Test Execution Manager, Test Planner
Features:
Languages Supported: All
Configurations: Sun/Sun OS

Tool: UNISET

Version:	–	Release Date:			
Number Sold:	–	Single User Price:	(Contact Vendor)		
Report Date:	12/30/92	Report Updated:	7/07/94		

Vendor: Unisys

POC:	Technical Support		
Phone:	313-972-7000	Fax:	–
E-mail:			
Address:	1 Unisys Place, P.O. Box 418 Detroit, MI 48232		

Description: UNISET is an integrated I-CASE toolset. It includes six modules: requirements spec tool (RST), structured design tool (SDT), source code generator (SCG), Ada design tool (ADT), automated module tester (AMT), and configuration management (CM).
Classification: Design, Coding, Requirements Analysis, Testing, Documentation, Configuration Management, Quality Assurance, Metrics, Reengineering, Software Engineering Environment, Capture-Replay Tool, Code Generator, Complexity Measurer, Coverage/Frequency Analyzer, Debugger, Forward Engineering, Test Execution Manager
Features:
Languages Supported: Ada, C, CMS-2, FORTRAN, Pascal
Configurations: Sun/Sun OS

Tool: UX-METRIC

Version:	–	Release Date:			
Number Sold:	–	Single User Price:	(Contact Vendor)		
Report Date:	12/29/92	Report Updated:	7/07/94		

Vendor: SET Laboratories, Inc.

POC:	Teresa M. Harrison		
Phone:	503-829-7123	Fax:	–
E-mail:			
Address:	PO Box 868 Mulino, OR 97042		

Description: UX-METRIC provides software complexity metrics that can help programmers write more maintainable code and managers effectively allocate testing and maintenance effort.
Classification: Coding, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Size Measurer, Structure Checker
Features: SLOC Actuals
Languages Supported: Ada, C, C++, FORTRAN, JOVIAL
Configurations: UNIX

Tool: V-TEST

Version:	4.0	Release Date:	1/01/93		
Number Sold:	150+	Single User Price:	$5,000+		
Report Date:	12/28/92	Report Updated:	6/01/94		
Training Available					
Evaluation Copy Available		Site License Available			

Vendor: Performance Software, Inc.

POC:	Jonathan D. Stone		
Phone:	508-462-0737	Fax:	508-462-4755
E-mail:			
Address:	26 Parker St. Newburyport, MA 01950		

Description: V-TEST allows automatic testing and performance measurement of interactive applications. Used for single and multiuser testing, regression, stress, volume testing, benchmarking, and capacity planning.
Classification: Design, Coding, Testing, Quality Assurance, Capture-Replay Tool, Comparator, Data Reducer & Analyzer, Performance/Timing Analyzer, Test Data Generator, Test Execution Manager
Features:
Languages Supported: All
Configurations: DEC, UNIX, VAX/VMS

Tool: V-TIMER

Version:	4.0	Release Date:	7/01/93		
Number Sold:	15+	Single User Price:	$6,000+		
Report Date:	12/27/93	Report Updated:	7/07/94		
Evaluation Copy Available		Site License Available			

Vendor: Performance Software, Inc.

POC:	Jonathan D. Stone		
Phone:	508-462-0737	Fax:	508-462-4755
E-mail:			
Address:	26 Parker St. Newburyport, MA 01950		

Description: V-TIMER is a system software utility that analyzes the performance of live interactive systems by measuring the actual response times of on-line applications.
Classification: Documentation, Quality Assurance, Data Reducer & Analyzer, Performance/Timing Analyzer
Features:
Languages Supported: All
Configurations: DEC, VAX/VMS

Tool: VADSWorks
Vendor: Rational Software, Corp.

Version: | Release Date: 1/01/89 | POC: Ray Thompson
Number Sold: -- | Single User Price: (Contact Vendor) | Phone: 703-318-5800 | Fax: 703-378-7600
Report Date: 6/08/94 | Report Updated: 7/07/94 | E-mail:
Training Available | Address: 205 Van Burn St.
Evaluation Copy Available | Herndon, VA 22070

Description: VADSWorks combines the power of VADS with VxWorks real-time networking OS to provide a cross development product to eliminate problems in traditional environments (lack of networking, debugging and error trapping).
Classification: Design, Coding, Testing, Reengineering, Software Engineering Environment, Compiler, Cross Assembler, Debugger, Disassembler, Downloader, Emulator, Linker, Retargeting, Run-Time Error Checker, Status Displayer
Features:
Languages Supported: Ada
Configurations: HP-9000/HP-UX, Sun/Sun OS, VAX/ULTRIX, VAX/UNIX, VAX/VMS

Tool: Variable Value Monitor (VVM-1)
Vendor: Biomation

Version: | Release Date: 1/01/89 | POC: Gregory A. Richardson
Number Sold: -- | Single User Price: (Contact Vendor) | Phone: 800-835-5996 | Fax: --
Report Date: 12/02/92 | Report Updated: | E-mail:
Address: 3875 Thundercloud Dr
Colorado Springs, CO 80920

Description: VVM-1 allows real-time monitoring and analysis of communication lines, hardware, and software execution via a range of graphical images. Runs on a psuedocode similar to C but renamed G.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: Mac/Mac OS

Tool: VAX Language Sensitive Editor (LSE)
Vendor: Digital Equipment Corp.

Version: | Release Date: 1/01/89 | POC: Technical Support
Number Sold: -- | Single User Price: (Contact Vendor) | Phone: 800-344-4825 | Fax: 603-881-2381
Report Date: 12/23/92 | Report Updated: | E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: DEC Language-Sensitive Editor increases programming output by allowing completion of several tasks in one editing session. Users can write, edit, compile, review, and correct errors without exiting the editor.
Classification: Coding, Reengineering, Cross Referencing Tool, Language Sensitive Editor, Syntax & Semantics Analyzer
Features:
Languages Supported: --
Configurations: DECstation, VAXstation

Tool: VAX Performance Advisor (VPA)
Vendor: Digital Equipment Corp.

Version: | Release Date: 1/01/89 | POC: Technical Support
Number Sold: -- | Single User Price: (Contact Vendor) | Phone: 800-344-4825 | Fax: 603-881-2381
Report Date: 12/23/92 | Report Updated: | E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: VPA is a VMS layered software product that supports DECwindows and furnishes vital information for better performance management and ensures precise capacity planning for the future.
Classification: Testing, X OS Utility, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations:

Tool: VAX Source Code Analyzer (SCA)
Version: Release Date: 1/01/89
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 1/27/93 Report Updated:

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: VAX DEC/Source Code Analyzer and Language-Sensitive Editor performs cross-referencing and static analysis of design and source code information. Cross-referencing is performed interactively.
Classification: Coding, Quality Assurance, Reengineering, Auditor, Cross Referencing Tool, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada, C, COBOL, FORTRAN, Pascal
Configurations: VAX/VMS

Tool: VAXset/Program Design Facility (VAXset/PDF)
Version: Release Date: 1/01/89
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/23/92 Report Updated:

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: VAXset is a set of software engineering tools for the development, testing, and maintenance of application programs. The six components include, SCA, LSE, CMS, MMS, PCA, and DTM. VAXset with Program Design Facility also supports reengineering.
Classification: Coding, Testing, Configuration Management, Quality Assurance, Reengineering, Software Engineering Environment, Auditor, Capture-Replay Tool, Coverage/Frequency Analyzer, Language-Sensitive Editor, Performance/Timing Analyzer, Restructurer, Reverse Engineering, Test Execution Manager
Features:
Languages Supported: Ada, Assembler, C, C++, COBOL, FORTRAN, JOVIAL, Pascal, PL/1
Configurations: MicroVAX, MicroVAX/VMS, VAX, VAXstation

Tool: Vermont HighTest
Version: 1.0 Release Date: 11/01/93
Number Sold: – Single User Price: $495
Report Date: 1/04/94 Report Updated: 7/07/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Vermont Creative Software
POC: Diane Lumbra
Phone: 802-848-7731 Fax: 802-848-3502
E-mail:
Address: 1 Pinnacle Meadows
Richford, VT 05476

Description: Vermont HighTest is a software testing program specifically designed for Windows developers.
Classification: Testing, Project Management, Quality Assurance, Software Engineering Environment, Capture-Replay Tool, Defect/Change Tracker, Performance/Timing Analyzer, Test Execution Manager, Test Instrumenter
Features: Program Loops
Languages Supported: All
Configurations: Windows

Tool: VIA/ALLIANCE
Version: 1.0 Release Date: 6/01/94
Number Sold: Single User Price: (Contact Vendor)
Report Date: 12/06/93 Report Updated: 7/07/94
Training Available Newsletter Available
Site License Available

Vendor: ViaSoft, Inc.
POC: Daniel T. Wiseman
Phone: 303-740-6668 Fax: 303-740-6758
E-mail:
Address: 4600 S. Ulster St., Suite 700
Denver, CO 80237

Description: VIA/ALLIANCE provides application-wide documentation and impact analysis capabilities tool for COBOL-based systems operating in an IBM MVS environment. It identifies impact of changes to a system component on other components of the system.
Classification: Design, Coding, Requirements Analysis, Documentation, Reengineering, Cross Referencing Tool, Data Reengineering, Redocumenter, Structure Checker
Features:
Languages Supported: CICS, COBOL, DB2, IDMS, JCL
Configurations: MVS/ESA, MVS/XA

Tool: VIA/Insight
Vendor: ViaSoft, Inc.

Version:	3.5	Release Date:	1/01/86	POC:	Daniel T. Wiseman		
Number Sold:	400+	Single User Price:	$30,000-$94,000	Phone:	303-740-6668	Fax:	303-740-6758
Report Date:	12/30/92	Report Updated:	7/07/94	E-mail:			
Training Available		Newsletter Available		Address:	4600 S. Ulster St., Suite 700		
Evaluation Copy Available					Denver, CO 80237		

Description: VIA/Insight is a COBOL analysis tool that automates the understanding process for programmers. It captures and displays logic and data path information, giving programmers the data they need to understand and maintain existing programs.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Reuse, Reverse Engineering, Structure Checker
Features:
Languages Supported: COBOL, DBMS
Configurations: IBM mainframes, MVS-XA/ESA

Tool: VIA/Renaissance
Vendor: ViaSoft, Inc.

Version:	1.0	Release Date:	1/01/91	POC:	Daniel T. Wiseman		
Number Sold:	70+	Single User Price:	$28,000-$120,000	Phone:	303-740-6668	Fax:	303-740-6758
Report Date:	2/04/93	Report Updated:	7/07/94	E-mail:			
Training Available		Newsletter Available		Address:	4600 S. Ulster St., Suite 700		
Evaluation Copy Available					Denver, CO 80237		

Description: VIA/Renaissance is a reverse engineering product that provides for recovery and reuse of existing business applications that allows programmers to examine programs graphically or in source code form.
Classification: Coding, Reengineering, Reuse, Data Reengineering, Reverse Engineering, Structure Checker
Features:
Languages Supported: COBOL, DBMS
Configurations: IBM mainframes, MVS-XA/ESA

Tool: VIA/SmartDoc
Vendor: ViaSoft, Inc.

Version:	1.1	Release Date:	1/01/90	POC:	Daniel T. Wiseman		
Number Sold:	60+	Single User Price:	$15,000-$47,500	Phone:	303-740-6668	Fax:	303-740-6758
Report Date:	12/30/92	Report Updated:	5/16/94	E-mail:			
Training Available		Newsletter Available		Address:	4600 S. Ulster St., Suite 700		
Evaluation Copy Available					Denver, CO 80237		

Description: VIA/SmartDoc is an intelligent documentation tool that fully understands COBOL programs. It automatically creates comprehensive program documentation as changes are made to the code.
Classification: Coding, Documentation, Quality Assurance, Reengineering, Redocumenter, Structure Checker
Features:
Languages Supported: COBOL
Configurations: IBM mainframes, MVS-XA/ESA

Tool: VIA/SmartEdit
Vendor: ViaSoft, Inc.

Version:	2.2	Release Date:	1/01/88	POC:	Daniel T. Wiseman		
Number Sold:	400	Single User Price:	$19K-$94K	Phone:	303-740-6668	Fax:	303-740-6758
Report Date:	2/04/93	Report Updated:	7/07/94	E-mail:			
Training Available		Newsletter Available		Address:	4600 S. Ulster St., Suite 700		
Evaluation Copy Available					Denver, CO 80237		

Description: VIA/SmartEdit provides COBOL sensitive editor enhancements for ISPF and creates a logical overview of a program's execution flow, locates related data fields, checks syntax, and aids maneuvering through the code.
Classification: Coding, Quality Assurance, Reengineering, Language-Sensitive Editor, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: COBOL
Configurations: IBM/MVS, MVS/XA

Tool: VIA/SmartTest
Version: 2.2 Release Date: 1/01/88
Number Sold: 600 Single User Price: $19,400-$94,000
Report Date: 12/30/92 Report Updated: 7/07/94
Training Available Newsletter Available
Evaluation Copy Available

Vendor: ViaSoft, Inc.
POC: Daniel T. Wiseman
Phone: 303-740-6668 Fax: 303-740-6758
E-mail:
Address: 4600 S. Ulster St., Suite 700
Denver, CO 80237

Description: VIA/SmartTest is a testing/debugging solution to incorporate an intelligent ISPF frontend that locates bugs and structure problems by integrating an interactive tester/debugger with a powerful program analyzer.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Coverage/Frequency Analyzer, Debugger, Run-Time Error Checker, Status Displayer, Test Execution Manager
Features:
Languages Supported: Assembler, CICS, COBOL, DB2, IDMS, PL/1, SQL
Configurations: IBM mainframes, MVS-XA/ESA

Tool: VIDEO
Version: 4.0 Release Date: 7/01/93
Number Sold: 200+ Single User Price: $2,500+
Report Date: 12/28/92 Report Updated: 7/07/94
Site License Available

Vendor: Performance Software, Inc.
POC: Jonathan D. Stone
Phone: 508-462-0737 Fax: 508-462-4755
E-mail:
Address: 26 Parker St.
Newburyport, MA 01950

Description: VIDEO is a terminal monitoring and recording software system for DEC Open VMS VAX and Alpha AXP platforms for software training, systems management security utility, and help desks aid.
Classification: Testing, X Help Desk, Capture-Replay Tool, Session Documenter
Features:
Languages Supported: All
Configurations: AIX, DEC, VAX/VMS

Tool: ViewPoint
Version: 3.2 Release Date: 12/01/93
Number Sold: 75 Single User Price: (Contact Vendor)
Report Date: 9/07/93 Report Updated: 7/07/94
Training Available
Evaluation Copy Available Site License Available

Vendor: DataMetrics Systems Corporation
POC: Al Twanmo
Phone: 800-869-3282 ext 355 Fax: 703-385-7711
E-mail: alt@datametrics.com
Address: 12150 E. Monument Dr. Suite 300
Fairfax, VA 22033

Description: ViewPoint monitors the performance of openVAX/VMS, AXP, and Windows NT systems. It consists of two parts: a data collector that runs on the VAX, and a data analysis/display function running on a PC as a Microsoft Windows V3.1 application.
Classification: Testing, Data Reducer & Analyzer, Performance/Timing Analyzer
Features:
Languages Supported: --
Configurations: VAX/VMS, AXP, WindowsNT

Tool: Visible Analyst Workbench (VAW)
Version: 4.2 Release Date:
Number Sold: -- Single User Price: $1795+
Report Date: 7/20/92 Report Updated: 5/26/94

Vendor: Visible Systems Corp.
POC: Technical Support
Phone: 617-890-2273 Fax: 617-890-8909
E-mail:
Address: 950 Winter Street
Waltham, MA 02154

Description: VAW supports all the work-group activities to further enhance the operations of the development teams.
Classification: Reengineering, Code Generator, Redocumenter, Restructurer, Structure Checker
Features:
Languages Supported: C, COBOL, DB2, SQL
Configurations: UNIX, Window 3.0, PC/OS/2

Tool: VistaREPLAY
Vendor: VERITAS Software

Version:	--	Release Date:		POC:	Susan M. Freeman		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	408-727-1222	Fax:	408-562-4334
Report Date:	8/31/93	Report Updated:	7/07/94	E-mail:	susan@veritas.c		
				Address:	4800 Great America Pkwys, Suite 420 Santa Clara, CA 95054		

Description: VistaREPLAY is an object-based GUI testing tool that provides capture and playback facilities and programmatic test script generation.
Classification: Testing, Quality Assurance, Capture-Replay Tool
Features: GUI-based testing
Languages Supported: --
Configurations: HP, IBM/RISC, Sun/SPARC

Tool: VistaTEST
Vendor: VERITAS Software

Version:		Release Date:		POC:	Richard M. Conley		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	408-727-1222	Fax:	408-562-4334
Report Date:	3/01/93	Report Updated:	7/06/94	E-mail:	susan@veritas.c		
				Address:	4800 Great America Pkwys, Suite 420 Santa Clara, CA 95054		

Description: VistaTEST tells user what needs to be tested and will give estimates of test cost and required effort level. Coverage measurements are furnished by determination of exercising code sections by testing programs.
Classification: Coding, Testing, Quality Assurance, Metrics, Reengineering, Complexity Measurer, Coverage/Frequency Analyzer, Test Planner
Features:
Languages Supported: C, C++
Configurations: OS/2, Pyramid/UNIX, RISC 6000/UNIX, Sun/UNIX

Tool: Visual COBOL
Vendor: mbp Software & Systems Technology, Inc.

Version:	3.3	Release Date:	1/01/93	POC:	Sales Department		
Number Sold:	20K	Single User Price:	$2,495	Phone:	510-769-5333	Fax:	510-769-5735
Report Date:	1/26/93	Report Updated:	7/06/94	E-mail:			
				Address:	1131 Harbor Bay Pkwy, Suite 260 Alameda, CA 94502		

Description: Visual COBOL/XO is a high- level ANSI-85 native code COBOL compiler complaint with X/Open portability guide and IBM SAA. IBM VS COBOL II language extensions are included to enhance program development.
Classification: Coding, Testing, Documentation, Reengineering, Software Engineering Environment, Compiler, Cross Referencing Tool, Debugger, Test Execution Manager, Text Editor
Features:
Languages Supported: Assembler, C
Configurations: Intel, RISC 6000

Tool: Vitro Automated Structured Testing Tool (VASTT)
Vendor: Vitro Corp.

Version:	8.1	Release Date:		POC:	Brenda Mitchell		
Number Sold:	--	Single User Price:	(Contact Vendor)	Phone:	301-231-1113	Fax:	301-231-1233
Report Date:	8/04/92	Report Updated:	7/06/94	E-mail:	mitchell@vitro.com		
Training Available				Address:	14000 Georgia Ave. Silver Spring, MD 20906-2972		

Description: VASTT reduces development and maintenance costs, results in higher software quality, and features evaluation of software complexity, testability and maintainability, and evaluation of software risk factors. It is available as a result of the service.
Classification: Design, Coding, Testing, Documentation, Quality Assurance, Metrics, Reengineering, Reuse, Complexity Measurer, Cross Referencing Tool, Data Reducer & Analyzer, Data Reengineering, Defect/Change Tracker, Forward Engineering, Maintainability Analyzer, Reliability Analyzer, Restructurer, Reverse Engineering, Size Measurer, Test Planner
Features: SLOC Actuals
Languages Supported: Ada, Assembler, C, CMS-2, COBOL, FORTRAN, JOVIAL, Pascal
Configurations: Sun/Sun OS, VAX/VMS

Tool: VS FORTRAN Compiler/Library/Debug
Version: 2.3 Release Date: 7/01/90
Number Sold: 5000+ Single User Price: (Contact Vendor)
Report Date: 7/19/93 Report Updated: 7/06/94

Vendor: Intl. Business Machines Corp.
POC: Brad Timothy
Phone: 801-328-6763 Fax: 801-328-6692
E-mail:
Address: 420 E. So. Temple
Salt Lake City, UT 84111-1391

Description: VS FORTRAN Compiler/Library/Debug is a compiler, library, and interactive debugger for Fortran. The tool set includes a static analyzer: the Inter Compilation Facility (ICA) for detecting incompatibilities between program units.
Classification: Coding, Testing, Reengineering, Compiler, Debugger, Library, Structure Checker, Syntax & Semantics Analyzer
Features:
Languages Supported: FORTRAN
Configurations: IBM MVS/XA, WM/SR, MVS/ESA

Tool: vtimes
Version: Release Date:
Number Sold: -- Single User Price: (Contact Vendor)
Report Date: 12/23/92 Report Updated: 7/06/94

Vendor: Digital Equipment Corp.
POC: Technical Support
Phone: 800-344-4825 Fax: 603-881-2381
E-mail:
Address: 146 Mairr St.
Maynard, MA 01754-2571

Description: vtimes is a performance/timing analyzer.
Classification: Testing, Performance/Timing Analyzer
Features:
Languages Supported: C
Configurations: DECstation/ULTRIX

Tool: Watcom C 32 for DOS
Version: 9.5 Release Date: 5/01/93
Number Sold: -- Single User Price: $199
Report Date: 1/26/93 Report Updated: 7/06/94
Newsletter Available
Evaluation Copy Available

Vendor: WATCOM
POC: Sales Dept.
Phone: 800-265-4555 Fax: 519-747-4971
E-mail: tech@watcom.on.ca
Address: 415 Phillip St.
Waterloo, ON N2L-3X2 Canada

Description: C 32 for DOS enable the development, debugging, performance profiling, and royalty-free distribution of 32-bit applications for extended DOS.
Classification: Coding, Testing, Compiler, Debugger, Performance/Timing Analyzer
Features:
Languages Supported: C, C++
Configurations: PC/MS-DOS

Tool: WinRunner
Version: 1.1 Release Date: 6/01/93
Number Sold: 500 Single User Price: (Contact Vendor)
Report Date: 12/15/93 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Mercury Interactive Corp.
POC: Stephanie Froude
Phone: 408-982-0100 Fax: 408-982-0149
E-mail: steph@merc-int.com
Address: 3333 Octavius Dr. Suite 104
Santa Clara, CA 95054

Description: WinRunner innovative object-oriented record and replay technology handles changes in the user interface automatically so that tests can be reused without modification for each new version or port of the application.
Classification: Testing, Quality Assurance, Reuse, Capture-Replay Tool, Maintainability Analyzer, Reliability Analyzer, Test Data Generator, Test Execution Manager
Features:
Languages Supported:
Configurations: IBM/Windows

Tool: WinScope
Vendor: The Periscope Co., Inc.

Version:	1.1	Release Date:	11/15/93	POC:	Dan Navarra		
Number Sold:	1000	Single User Price:	$149	Phone:	404-875-8080	Fax:	404-872-1973
Report Date:	12/06/93	Report Updated:	7/06/94	E-mail:			
		Newsletter Available		Address:	1475 Peachtree St. Suite100		
		Site License Available			Atlanta, GA 30309		

Description: WinScope is both an API-level debugger and a multifaceted Windows discovery tool. Designed to take the mystery out of Windows application development. WinScope enables developers to debug and optimize their application.
Classification: Coding, Testing, Reengineering, Software Engineering Environment, Debugger, Performance/Timing Analyzer, Reverse Engineering, Status Displayer
Features:
Languages Supported: All
Configurations: PC/Windows

Tool: Workstation Interactive Test Tool (WITT)
Vendor: Intl. Business Machines Corp.

Version:	2.1	Release Date:		POC:	Brad Timothy		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	801-328-6763	Fax:	801-328-6692
Report Date:	12/23/92	Report Updated:	7/06/94	E-mail:			
				Address:	420 E. So. Temple		
					Salt Lake City, UT 84111-1391		

Description: WITT helps find defects in software's interactive applications. It helps decrease costs, minimizes skills needed for programming, furnishes retrieval of test cases and screen image files, and allows other users to work on other tasks while testing.
Classification: Coding, Testing, Quality Assurance, Capture-Replay Tool, Test Data Generator, Test Execution Manager
Features: GUI-based Testing
Languages Supported: All
Configurations: IBM/OS/2

Tool: X-ANALYSIS
Vendor: Databorough, Inc.

Version:	2.1.3	Release Date:	9/01/93	POC:	William Grossman		
Number Sold:	960	Single User Price:	$18K-$100K	Phone:	800-444-9397	Fax:	510-838-1672
Report Date:	1/06/93	Report Updated:	7/06/94	E-mail:			
Training Available		Newsletter Available		Address:	PO Box 873		
Evaluation Copy Available		Site License Available			Alamo, CA 94507-0873		

Description: X-ANALYSIS analyzes existing systems and automatically generates a new one. It's tracks and controls system changes. It features include reverse engineering, restructuring and auditing, automated program generation, and local data modeling.
Classification: Design, Coding, Testing, Documentation, Reengineering, Database, Auditor, Code Generator, Cross Referencing Tool, Data Name Rationalizer, Forward Engineering, Restructurer, Reverse Engineering, Structure Checker
Features:
Languages Supported: C, COBOL, RPG
Configurations: AS/400

Tool: XAda
Vendor: Aetech

Version:	6.1	Release Date:		POC:	Technical Support		
Number Sold:	–	Single User Price:	$1,995	Phone:	619-431-7714	Fax:	619-431-0860
Report Date:	3/03/93	Report Updated:	7/06/94	E-mail:			
Training Available		Newsletter Available		Address:	5841 Edison Place, Suite110		
		Site License Available			Carlsbad, CA 92008		

Description: XAda is an Ada programming environment for X-Windows and POSIX. XAda integrates a Motif-based Ada language-sensitive editor with special Ada features and tools, a validated Ada compiler, and an X-Windows library for POSIX.
Classification: Coding, Documentation, Configuration Management, Reengineering, Code Generator, Commenter, Compiler, Forward Engineering, Language Sensitive Editor, Optimizer, Reformatter, Structure Checker, Symbolic Execution Tool, Syntax & Semantics Analyzer
Features:
Languages Supported: Ada
Configurations: PC/UNIX

Tool: Xaminer
Version: Release Date: 1/01/93
Number Sold: – Single User Price: (Contact Vendor)
Report Date: 12/21/93 Report Updated: 7/06/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Performance Awareness Crop.
POC: Technical Support
Phone: 919-870-8800 Fax: 919-870-7416
E-mail:
Address: 8521 Six Forks Rd., Suite 200
Raleigh, NC 27615

Description: Xaminer allows you to perform journaling of user sessions. Xaminer lets you constantly monitor mission-critical applications and user transactions. The Xaminer recorder runs transparent to the user, recording and archiving user sessions.
Classification: System Simulation, Testing, Quality Assurance, Capture-Replay Tool, Functional Simulator, Performance/Timing Analyzer
Features:
Languages Supported: All
Configurations: AIX, HP-UX, Solaris2.1, Sun OS, DEC, Motorola, NCR

Tool: XDC
Version: 2.1 Release Date:
Number Sold: 150 Single User Price: (Contact Vendor)
Report Date: 5/18/93 Report Updated: 5/19/94
Training Available
Evaluation Copy Available Site License Available

Vendor: Cole Software, Inc.
POC: Jim Rahm
Phone: 404-760-7306 Fax: 703-242-1470
E-mail:
Address: 992 E. Freeway Dr., Suite A
Conyers, GA 30207

Description: XDC is a flexible comprehensive IBM MVS assembler debugging tool. Interactive through TSO, it can debug authorized code, IES, or normal application programs. No source code needed.
Classification: Requirements Trace, Coding, Testing, Quality Assurance, Reengineering, Software Engineering Environment, Assembler, Coverage/Frequency Analyzer, Debugger, Simulator
Features:
Languages Supported: Assembler
Configurations: MVS

Tool: XpertRule
Version: 1.22 Release Date: 1/01/94
Number Sold: 2,000+ Single User Price: $3,500
Report Date: 6/25/92 Report Updated: 6/13/94

Vendor: Cincom Systems, Inc.
POC: Technical Support
Phone: 800-543-3010 Fax: 513-662-2300
E-mail:
Address: 2300 Montana Ave.
Cincinnati, OH 45211-3899

Description: XpertRule consists of three separate components, a knowledge specification component, an application generation component, and a data analysis component.
Classification: Design, Coding, X AI, Capture-Replay Tool, Code Generator, Expert System Shell
Features:
Languages Supported: C, COBOL, Pascal
Configurations: Windows, PC/MS-DOS

Tool: XRAY Source Explorer
Version: 1.0C Release Date: 2/01/92
Number Sold: – Single User Price: $995
Report Date: 1/26/93 Report Updated: 7/06/94
Training Available Newsletter Available
Evaluation Copy Available

Vendor: Microtec Research, Inc.
POC: Jeff Shimbo
Phone: 800-950-5554 Fax: 408-982-8266
E-mail:
Address: 2350 Mission College Blvd.
Santa Clara, CA 95054

Description: XRAY Source Explorer is a Reengineering, maintenance, and development tool that graphically displays the structure of the program. It provides detailed information about a program's calling structure, its function definitions, and its function calls.
Classification: Coding, Reengineering, Software Engineering Environment, Reverse Engineering, Structure Checker
Features:
Languages Supported: C, C++
Configurations: Sun/Sun OS

Tool: XREFPLUS
Vendor: Jensen Research Co.

Version:	–	Release Date:		POC:	Charles J. Smith		
Number Sold:	–	Single User Price:	(Contact Vendor)	Phone:	201-337-4000	Fax:	201-337-4334
Report Date:	3/02/93	Report Updated:	7/06/94	E-mail:			
				Address:	169 Ramapo Valley Road Oakland, NJ 07436		

Description: XREFPLUS furnishes a large variety of highly detailed reports that include DATASETs, MEMBER FLOW CHARTS, NOT-FOUND SUMMARYs, and more. Makes customized reports.
Classification: Coding, Testing, Documentation, Reengineering, Cross Referencing Tool
Features:
Languages Supported: JCL
Configurations: IBM/MVS

Tool: XRunner
Vendor: Mercury Interactive Corp.

Version:	2.1	Release Date:	1/01/92	POC:	Stephanie Froude		
Number Sold:	9000	Single User Price:	(Contact Vendor)	Phone:	408-982-0100	Fax:	408-982-0149
Report Date:	12/28/92	Report Updated:	7/06/94	E-mail:	steph@merc-int.com		
Training Available				Address:	3333 Octavius Dr. Suite 104		
Evaluation Copy Available		Site License Available			Santa Clara, CA 95054		

Description: XRunner is a testing system for UNIX/X Windows environment and is suited for testing stand-alone applications or client/server applications in a single-client configuration. XRunner addresses the growing need for improvements in test/QA productivity.
Classification: Coding, Testing, Quality Assurance, Reuse, Capture-Replay Tool, Data Reducer & Analyzer, Maintainability Analyzer, Reliability Analyzer, Test Data Generator, Test Execution Manager
Features: GUI-based Testing
Languages Supported: All
Configurations: DEC/ULTRIX, HP/HP-UX, IBM, Sun/Sun OS

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Appendix A.2: Test Tool List by Vendor Name

Vendor Name	Tool Name
+1 Software Engineering	Metrics4C, Metrics4Fortran, Metrics4Pascal, Metrics4Project, TREESOFT
A+ Software, Inc.	Automated Documentation System (ADS), Navigator
ABRAXAS Software, Inc.	CodeCheck, PCYACC
Accelr8 Technology Corp.	Open ACCLIM8
AccuWare, Inc.	AccuTest
Advanced Programming Techniques	SEEK
Advanced Software Automation, Inc.	AutoAnalyzer, AutoDiagrammer, AutoStructureChart, C Source Analyzer, Hindsight, Software Quality Analysis Module, Structure & Logic Analysis Module, Test Coverage Analysis Module
Advanced Software, Inc.	DocuComp
Advanced Systems Concepts, Inc.	ABSTRACT/PROBE, STATUS
Aetech	Ada Software Development Toolset, IntegrAda, XAda
AGS Management Systems	FIRSTCASE
Aldon Computer Group	Analyzer, COMPARE, HARMONIZER, SCOMPARE
Allen Systems Group	Ad/Vantage.DM*, Documentation-Aid, MVS (Doc-Aid), SEDIT.DB, SEDIT.MVS, TestBench.DM*
ALSYS, Inc.	AdaProbe/ICE, AdaTune, AdaVerify
Amadeus Software Research, Inc.	Amadeus
American InterFace Computer, Inc.	PLASMA
Analysis & Computer Systems, Inc.	CaseQMS, CustomQA
Applied Business Technology	Metrics Manager (M M)
Applied Logic Corp.	File Edit Utility (FEU)
Archimedes Software, Inc.	BugBase
Array Systems Computing Products, Inc.	Expert Debugging Software Assistant (EDSA)
ASTA, Inc.	QA Administer, QA C, QA C++, QA FORTRAN, QA Process Control Manager (QA PCM)
ASV/SCEL	J73 Automated Verification System (J73AVS)
AT&T, Performance Analysis and Tools	BUSTER Test Management System
AT&T, Software Solutions Group	QUARTZ Remote Terminal Emulator
AutoCASE Technology	AutoFlow
AutoTester, Inc.	AutoTester, AutoTester For OS/2, AutoTester for Windows, AutoTester Plus
B-TREE SOFTWARE, Inc.	esVS, SVS Automated Software Testing
BBN Systems and Technologies	BBN/Catalyst Software
Bell Canada, Corp. Quality Assurance	DATRIX
Bender & Assoc., Inc.	SOFTTEST
BGS Systems	CRYSTAL
Biomation	CLAS 2000, Variable Value Monitor (VVM-1)
Blossom/Catalytix Corp.	Safe C Runtime Analyzer
Boole & Babbage, Inc.	PROBLEM PROGRAM EVALUATION (PPE)
Bullseye Software	C-Cover
Cadre Technologies, Inc.	Ensemble, Teamwork/Ada, Teamwork/TestCase
CARDtools Systems	CARDtools (CARDtools)
Cater Software	C->it (see.it), C/ANALYST
CenterLine Software, Inc.	CodeCenter, ObjectCenter, TestCenter
CGI Systems, Inc.	PACREVERSE, Source/RE
Cincom Systems, Inc.	XpertRule
Clarity Concepts Systems	Enforcer I, Enforcer II
CLEAR Software, Inc.	CLEAR Plus

Vendor Name	Tool Name
Clyde Digital Systems, Inc.	CarbonCopy
Cobalt Blue, Inc.	FOR_STRUCT, FOR_STUDY
COBOL Maintenance Technologies	GPSA
Cole Software, Inc.	CPR, XDC
Computer Associates Intl.	CA-COBOLVISION/Analyzer, CA-EZTEST/CICS, CA-FPXpert, CA-InterTest, CA-METRICS, CA-OPTIMIZER, CA-PAN/LCM, CA-Realia II Workbench, CA-TRAPS, CA-VERIFY
Computer Data Systems, Inc.	COBOL/METRICS, CONFIGURE, SCAN/COBOL, SLEUTH
Computer Innovations, Inc.	MAX Macro Assembler (MAX)
Computer Power Group, Inc.	Metrics Analysis and Reporting System (MARS), Test/Cycle
Computer Sciences Corp.	DESIGN GENERATOR
Compuware Corp.	Compuware Solution Set, DATATEC, PATHVU, PLAYBACK
Concurrent Computer Corp.	ADANON, ADAXPA, ADAXREF, C3Ada Symbolic Debugger
Consumer Systems Corp.	DataBasic II
Corporate Computer Systems	DELTA, SCONS
COSMIC	FPT
Dashboard Software	TrackDeck
Data Center Software	Monitor/Plus, QUEMAN
Databorough, Inc.	X-ANALYSIS
DataMetrics Systems Corporation	ViewPoint
DiagSoft, Inc.	QAPlus
Digital Equipment Corp.	cflow, COHESION Team/SEE, ctrace, cxref, DEC FUSE, DEC FUSE Call Graph Browser, DEC FUSE Cross-Reference, DEC/Test Manager (DTM), DECset, diff in Op Sys, dxdiff, gprof, lint, perfmeter, perfmon, Performance Coverage Analyzer (PCA), pixie, prof, size, time, VAX Language Sensitive Editor (LSE), VAX Performance Advisor (VPA), VAX Source Code Analyzer (SCA), VAXset/Program Design Facility (VAXset/PDF), vtimes
Digital Sciences, Inc.	Fortran Utility System
Direct Technology	Automator QA, Automator QA (Windows Edition), Automator QA with Navigator
Donatech Corp.	RealTime Testware (RT)
Dynamics Research Corp.	Ada Measurement and Analysis Tool (AdaMAT)
Eastern Systems, Inc.	Evaluator
Eden Systems Corp.	ES RE/Vision, Q/Artisan, Q/ARTISAN PC, Q/AUDITOR PL/I, Q/AUDITOR PL/I PC
EDP Management, Inc.	LOOKAT
EEsof, Inc.	Anacat
EVB Software Engineering, Inc.	Complexity Measures Tool (CMT)
Franz Inc.	Allegro Composer Development Environment
Galorath Associates, Inc.	SEER
Gary Bergman Associates, Inc.	Advanced Debugging System (ADS)
General Electric Co. (R & D)	Environment for Code Re-Engineering (ENCORE)
General Research Corp.	AdaQuest, RXVP80
Gimpel Software	C-Vision for C, FlexeLint, PC-Lint
GPP Ges fur Prozessrechnerprogrammierung	RE-DOC, RE-SPEC
Hertzler Systems, Inc.	QA/S
Hewlett-Packard	Basis Branch Analyzer (BBA), HP 64000-UX Micro. Software Dev., HP Ada/300 Development System, HP AxAda Programming Support Environment, HP Branch Validator, HP Softbench

Vendor Name	Tool Name
Hypersoft Corp.	Application Browser
Information Processing Techniques Corp.	COBOL-lint, FORTRAN-lint, lint-PLUS
Intek Integration Technologies	Intek C++
Intel Corp.	SimCASE - Simulator/Debugger (SimCASE)
Interactive Development Environments	Software through Pictures (StP), StP/T, T
Interlex	Source Code Analyzer (SCA)
International Software Automation, Inc.	Panorama C, Panorama C++, Panorama C++/OO-Analyzer, Panorama C++/OO-Browser, Panorama C++/OO-Diagrammer, Panorama C++/OO-SQA, Panorama C++/OO-Test, QualityFirst C
InterPort Software Corp.	InterCASE KnowledgeWare Gateway (IKG)
Intersolv	Design Recovery Series, Excelerator for Design Recovery
Intl. Business Machines Corp.	Automated Software Test Facility, Cross System Product (CSP), Software Analysis Test Tool, VS FORTRAN Complier/Library/Debug, Workstation Interactive Test Tool (WITT)
Intl. Logic Corp.	F-SCAN
Intl. Software Systems, Inc.	Auto V&V/Ada
IPL Information Processing Ltd.	AdaTEST, CANTATA
ITCN	Computer Tester Analyzer Controller (C-TAC), TD2000
Jacobson Software, Inc.	COBOL Magic
Jensen Research Co.	XREFPLUS
Keithley Instruments, Inc.	TestPoint
KnowledgeWare, Inc.	ADW/Inspector, ADW/Pinpoint, Legacy Workbench
Legent Corp.	ENDEVOR, MICS MVS Performance Manager, Problem Alert System (PAS)
LIANT Software Corp.	C-SCAPE
Little Tree Consulting	Ada Analyzer, Ada Type Interchange Generator
LOGICON, Inc.	Static Analysis Tool Set (SATS)
M.D. Friedman Associates, Inc.	COBOL STANDARDS ANALYZER, CONVERSION ENGINE
MacKinney Systems	COBOL Glossary, Source Program Compare
Marble Computer, Inc.	DCD III
Marconi Systems Technology	Requirements and Traceability Management (RTM)
MB Solutions, Inc.	JCL/Convert, JCL/Cross-Reference
mbp Software & Systems Technology, Inc.	Visual COBOL
McCabe & Assoc., Inc.	Battlemap Analysis Tool (BAT), CodeBreaker, McCabe Instrumentation Tool, McCabe Slice Tool, Slice Tool
Menlo Business Systems, Inc.	Foundation Vista10
Mercury Interactive Corp.	LoadRunner, TestRunner, WinRunner, XRunner
Micro Focus, Inc.	Micro Focus COBOL/2 for UNIX, Micro Focus Cobol/2 Workbench, Micro Focus Toolbox for UNIX, Micro Focus Workbench
Microsoft Corp.	Microsoft Source Profiler, Microsoft Test
Microtec Research, Inc.	Microtec Cross Development Tools, XRAY Source Explorer
MultiScope	Run Time Debugger
National Information Systems, Inc.	ACCENT R
NCCOSC	CMS-2 Design Analyzer (DESAN), CMS-2 Standards Checker (STDCK), CMS-2 Test Coverage Analyzer (TCA), Metrics Generator (METRC)
Neal Nelson & Assoc.	Business BenchMark, Remote Terminal Emulator (RTE)
NOI Systems	SHOWDIFF

Vendor Name	Tool Name
Norwegian Technical University	FORTRAN VERIFIER
Nu-Mega Technologies	Bounds-Checker, NET-Check, NLM-Check, Soft-ICE
Oasys, Inc.	MULTI
Onset Computer Corp.	Crossbow
Optima Software, Inc.	Change Man
Optimization Technology, Inc.	ARC SADCA
OTG Systems, Inc.	FORCHECK, plusFORT
ParcPlace Systems	SmallTalk-80
Peregrine Systems, Inc.	Hiperstation, Hiperstation MP (HS/MP)
Perennial Corp.	Perennial Driver/Monitor
Performance Awareness Crop.	InnerVue, preVue, preVue-X, Xaminer
Performance Software, Inc.	V-TEST, V-TIMER, VIDEO
Personyx	FORCE, JOVIAL Analysis and Conversion Kit (JACK)
ProCASE Corp.	SMARTcheck, SMARTsystem
Productivity Management Group, Inc.	Productivity Manager
Program Analysers, Ltd.	TESTBED
Programart Corp.	APMPower, STROBE
Prometheus Products	Acknowledge
Proprietary Software Systems, Inc.	AdaRAID, Code Auditor, JOVIAL IPSE (JIPSE), PSS Ada Toolset for ZR34325, PSS ADA/JOVIAL 1750A SUPPORT TOOLS, PSS JOVIAL Compiler, PSS Link Editor, PSS Macro Assembler
Pure Software, Inc.	Purify, Quantify
QED Software Inc.	Eagle
QSM Associates, Inc.	Size Planner
Qual Trak Corp.	Distributed Defect Tracking System (DDTs)
Quality Engineering Software, Inc.	QES/Architect, QES/Manager
Quantasm Corp.	AsmFlow Professional
Quibus Enterprises, Inc.	FORWARN
Rational Software, Corp.	Apex, TestMate, VADSWorks
Rational Systems, Inc.	Instant-C
Ready Systems	Real-Time C (RTC), RTAda
Reasoning Systems, Inc.	REFINE/Ada, REFINE/C, REFINE/COBOL, REFINE/FORTRAN, Software Refinery
Reliable Software Technologies Corp.	PISCES-Automatic Test Case Generator, PISCES-Software Testability Analysis
Research Triangle Institute	Architecture Design & Assessment System (Adas)
S-CUBED, Inc.	DAISys, SUPRe/DAISys
SAIC-Dayton	CCount, FCount
SAS Institute, Inc.	SAS System
SCANDURA & Assoc.	PRODOC re/NuSys Workbench
Science Applications Int'l Corp.	AdaReVu, REENgineering Environment and Workbench (REENEW)
Scopus Technology, Inc.	QualityTEAM
Sequel Corp.	ProTerm
SERENA, Inc.	SyncTrac
SET Laboratories, Inc.	PC-METRIC, UX-METRIC
Softbridge, Inc.	Automated Test Facility (ATF)
Software Blacksmiths, Inc.	C-CALL, C-DOC, C-METRIC, C-REF
Software Business Management, Inc.	DecisionVision 1 (DV1)

Vendor Name	Tool Name
Software Eclectics, Inc.	SE/One
Software Eng. & Enhancement Center, Inc.	COBOL Analyst
Software Engineering Assoc.	JOVIAL Source Code Review and Metrics (J-SCRAM), JOVIAL System Documentor (JSD)
Software Interfaces, Inc.	SQLASSIST
Software One, Ltd.	Software One Exchange
Software Productivity Research, Inc.	Checkpoint, SPQR SIZER/FP Function Point Calculator (SIZER/FP), SPQR/20 Estimator (SPQR/20)
Software Quality Automation	SQA TeamTest
Software Research, Inc.	STW/Advisor, STW/Coverage, STW/Regression
Software Systems Design, Inc.	Ada Design and Documentation Language (ADADL), BugFinder/Ada, C Design and Documentation Language (CDADL), DesignGen, Document Generator (DocGen), FORTRAN Reverse Eng & Document System (FREDoc), GrafBrowse, QualGen, TestGen
Software Technology Support Center	JOVIAL Reverse Engineering Toolset (JRETS)
Step Engineering	Eclipse 29K, Excell 930, Express 960
Stepstone Corp.	Objective-C
Sterling Software, Inc.	ANSWER:Testpro for DOS, ANSWER:Testpro for Windows, COMPAREX
Stony Brook Software	Pascal+
SYSCORP Intl.	MicroSTEP
System Management Software, Inc.	Dynamic Load Balancer (DLB)
Systemware Laboratories, Inc.	DOSSIER BROWSE, DOSSIER PROVE
TA Consultancy Services Ltd.	MALPAS
Taumetric Corp.	Pascal-2 Development System
Teledyne Brown Engineering	TAGS Case2
Telesoft	TeleGen2 Ada
Testwell Oy	TBGEN, TCMON
Texas Instruments	NightTrace
The Periscope Co., Inc.	WinScope
The Software Edge Inc.	Defect Control System (DCS)
Tiburon Systems, Inc.	FERRETT
TouchStone Software Corp.	CheckIt LAN, CheckIt PRO:Analyst
Trinzic Corp.	Application Testing Facility (ATF)
Unisys	Online Session Capture and Replay (OSCAR), UNISET
Vector Engineering	AdaCAST
Venue	Lisp Object-Oriented Programming System (LOOPS), Medley Development Environment (Medley)
Verilog, Inc.	Logiscope, Logiscope Graphical Editor
VERITAS Software	VISTA, VistaKERNEL, VistaREPLAY, VistaTEST
Vermont Creative Software	Dr. Taylor's Test (Ghost), Vermont HighTest
ViaSoft, Inc.	ESW Code Change, ESW Profile Analysis (VIA/Recap), ESW Testing, Existing Systems Workbench (ESW), VIA/ALLIANCE, VIA/Insight, VIA/Renaissance, VIA/SmartDoc, VIA/SmartEdit, VIA/SmartTest
Visible Systems Corp.	Visible Analyst Workbench (VAW)
Vitro Corp.	Vitro Automated Structured Testing Tool (VASTT)
WATCOM	Watcom C 32 for DOS
XA Systems Corp.	DATATEC-DS

Appendix A.3: Test Tool Lists by Test Tool Type

Assertion Analyzer

Call the STSC for a current list of assertion analyzers.

Auditor

Ada Analyzer
AdaQuest
AdaReVu
ADW/Inspector
ADW/Pinpoint
Automated Documentation System (ADS)
AutoTester For OS/2
AutoTester for Windows
AutoTester Plus
CA-PAN/LCM
CANTATA
CMS-2 Standards Checker (STDCK)
COBOL Analyst
COBOL STANDARDS ANALYZER
Code Auditor
CodeCheck
COMPAREX
CONFIGURE
DATRIX
DECset
DOSSIER PROVE
Enforcer I
Enforcer II
ES RE/Vision
esVS
File Edit Utility (FEU)
FORCHECK
FORTRAN Reverse Eng & Document System (FREDoc)
J73 Automated Verification System (J73AVS)
lint
lint-PLUS
Logiscope
Panorama C++/OO-Analyzer
Panorama C++/OO-SQA
Q/Artisan
Q/ARTISAN PC
Q/AUDITOR PL/I
Q/AUDITOR PL/I PC
QA Administer
QA C
QA C++
QA FORTRAN
QualGen
REFINE/Ada
REFINE/C
REFINE/COBOL
REFINE/FORTRAN
SCAN/COBOL
SEEK
Software Refinery
VAX Source Code Analyzer (SCA)
VAXset/Program Design Facility (VAXset/PDF)
X-ANALYSIS

Capture-Replay Tool

Acknowledge
Ad/Vantage.DM*
ANSWER:Testpro for DOS
ANSWER:Testpro for Windows
Application Testing Facility (ATF)
Automated Software Test Facility
Automated Test Facility (ATF)
Automator QA
Automator QA (Windows Edition)
Automator QA with Navigator
AutoTester
AutoTester for Windows
AutoTester Plus
CA-TRAPS
CA-VERIFY
CarbonCopy
Compuware Solution Set
CPR
DEC/Test Manager (DTM)
DECset
Design Recovery Series
Dr. Taylor's Test (Ghost)
Evaluator
FERRETT
Hiperstation
Hiperstation MP (HS/MP)
LoadRunner
Micro Focus Cobol/2 Workbench
Micro Focus Toolbox for UNIX
Micro Focus Workbench
Microsoft Test
Online Session Capture and Replay (OSCAR)
PLAYBACK
preVue
preVue-X
ProTerm
QES/Architect
QUARTZ Remote Terminal Emulator
RealTime Testware (RT)
Remote Terminal Emulator (RTE)
SQA TeamTest
STW/Regression
SVS Automated Software Testing
TestBench.DM*
TestMate
TestRunner
UNISET
V-TEST
VAXset/Program Design Facility (VAXset/PDF)
Vermont HighTest
VIA/SmartTest
VIDEO
VistaREPLAY
WinRunner
Workstation Interactive Test Tool (WITT)
Xaminer
XpertRule
XRunner

Comparator

CA-PAN/LCM
CA-VERIFY
Change Man
COMPARE
COMPAREX
DataBasic II
DELTA
diff in Op Sys
DocuComp
DOSSIER PROVE
dxdiff
ENDEVOR
HARMONIZER
LOOKAT
Microsoft Test
SCOMPARE
SCONS
SHOWDIFF
Source Program Compare
SQA TeamTest
STW/Regression
V-TEST

Complexity Measurer

Ada Analyzer
Ada Design and Documentation Language (ADADL)
Ada Measurement and Analysis Tool (AdaMAT)
Ada Software Development Toolset
AdaQuest
AdaTEST
ADW/Inspector
Amadeus
ARC SADCA
AutoAnalyzer
Battlemap Analysis Tool (BAT)
C Design and Documentation Language (CDADL)
C-DOC
C-METRIC
CA-FPXpert
CA-METRICS
CANTATA
CCount
COBOL Analyst
COBOL/METRICS
CodeCheck
Complexity Measures Tool (CMT)
DATRIX
DecisionVision 1 (DV1)
DESIGN GENERATOR
Enforcer I
Enforcer II
Ensemble
Environment for Code Re-Engineering (ENCORE)
ES RE/Vision
Excelerator for Design Recovery
FORCE
GrafBrowse
Hindsight
J73 Automated Verification System (J73AVS)
JOVIAL Analysis and Conversion Kit (JACK)
JOVIAL Reverse Engineering Toolset (JRETS)
JOVIAL Source Code Review and Metrics (J-SCRAM)
Legacy Workbench
lint-PLUS
Logiscope
MALPAS
Metrics Analysis and Reporting System (MARS)
Metrics Generator (METRC)
Metrics4C
Metrics4Fortran
Metrics4Pascal
Panorama C
Panorama C++
Panorama C++/OO-Analyzer
Panorama C++/OO-Browser
Panorama C++/OO-Diagrammer
Panorama C++/OO-SQA
PATHVU
PC-METRIC
PRODOC re/NuSys Workbench
Productivity Manager
PSS JOVIAL Compiler
Q/AUDITOR PL/I
Q/AUDITOR PL/I PC
QA C
QA C++
QA FORTRAN
QualityFirst C
Software Quality Analysis Module
Source/RE
Structure & Logic Analysis Module
STW/Advisor
TCMON
TESTBED
UNISET
UX-METRIC
VISTA
VistaKERNEL
VistaTEST
Vitro Automated Structured Testing Tool (VASTT)

Coverage/Frequency Analyzer

AdaQuest
AdaRAID
AdaTEST
AdaTune
ADW/Pinpoint
Analyzer
AutoAnalyzer
AutoFlow
Basis Branch Analyzer (BBA)
C-Cover
CA-OPTIMIZER
CA-Realia II Workbench
CANTATA
cflow

Coverage/Frequency Analyzer (continued)

CMS-2 Test Coverage Analyzer (TCA)
Computer Tester Analyzer Controller (C-TAC)
DCD III
DECset
Ensemble
Hindsight
HP 64000-UX Micro. Software Dev.
HP AxAda Programming Support Environment
HP Branch Validator
J73 Automated Verification System (J73AVS)
Logiscope
McCabe Instrumentation Tool
Micro Focus COBOL/2 for UNIX
Micro Focus Cobol/2 Workbench
Micro Focus Toolbox for UNIX
Micro Focus Workbench
Microtec Cross Development Tools
Panorama C
Panorama C++
Panorama C++/OO-Test
Performance Coverage Analyzer (PCA)
PISCES-Automatic Test Case Generator
PISCES-Software Testability Analysis
PLASMA
PRODOC re/NuSys Workbench
PSS Ada Toolset for ZR34325
QualityFirst C
RXVP80
Safe C Runtime Analyzer
SLEUTH
Slice Tool
Software Analysis Test Tool
STW/Coverage
SVS Automated Software Testing
TCMON
Test Coverage Analysis Module
TESTBED
TestCenter
TestGen
TestMate
TREESOFT
UNISET
VAXset/Program Design Facility (VAXset/PDF)
VIA/SmartTest
VISTA
VistaKERNEL
VistaTEST
XDC

Cross Referencing Tool

ABSTRACT/PROBE
Ada Design and Documentation Language (ADADL)
Ada Software Development Toolset
ADAXREF
Apex
Application Browser
AsmFlow Professional
Automated Documentation System (ADS)
C Design and Documentation Language (CDADL)
C-CALL
C-DOC
C-REF
C-SCAPE
C-Vision for C
C/ANALYST
C3Ada Symbolic Debugger
CA-COBOLVISION/Analyzer
COBOL Analyst
COBOL Glossary
COBOL Magic
CodeCenter
Crossbow
cxref
DAISys
DATATEC-DS
DATRIX
DCD III
DEC FUSE
DEC FUSE Cross-Reference
DECset
Document Generator (DocGen)
Documentation-Aid, MVS (Doc-Aid)
DOSSIER BROWSE
DOSSIER PROVE
Eclipse 29K
Ensemble
Excell 930
Express 960
F-SCAN
FORCE
FORCHECK
FORWARN
GPSA
GrafBrowse
Hindsight
HP Ada/300 Development
Instant-C
InterCASE KnowledgeWare Gateway (IKG)
JCL/Convert
JCL/Cross-Reference
JOVIAL Analysis and Conversion Kit (JACK)
JOVIAL IPSE (JIPSE)
JOVIAL System Documentor (JSD)
Legacy Workbench
Lisp Object-Oriented Programming System (LOOPS)
McCabe Instrumentation Tool
Medley Development Environment (Medley)
Navigator
ObjectCenter
Objective-C
PACREVERSE
Panorama C
Panorama C++
Panorama C++/OO-Analyzer
Panorama C++/OO-Browser
PATHVU
PLASMA

Cross Referencer (continued)

PRODOC re/NuSys Workbench
PSS Ada Toolset for ZR34325
PSS Link Editor
PSS Macro Assembler
QualityFirst C
Real-Time C (RTC)
REENgineering Environment and Workbench (REENEW)
RTAda
RXVP80
SmallTalk-80
SMARTcheck
Source Code Analyzer (SCA)
Source/RE
Structure & Logic Analysis Module
superCASE (SCI)
SUPRe/DAISys
TeleGen2 Ada
TESTBED
TREESOFT
VAX Language Sensitive Editor (LSE)
VAX Source Code Analyzer (SCA)
VIA/ALLIANCE
Visual COBOL
Vitro Automated Structured Testing Tool (VASTT)
X-ANALYSIS
XREFPLUS

Data Reducer and Analyzer

Call the STSC for a current list of data reducers and analyzers.

Data Extractor

Call the STSC for a current list of data extractors.

Debugger

Call the STSC for a current list of debuggers.

Defect/Change Tracker

Ada Analyzer
Ada Measurement and Analysis Tool (AdaMAT)
AdaReVu
Amadeus
AutoTester Plus
BugBase
BugFinder/Ada
C Design and Documentation Language (CDADL)
C-DOC
CA-METRICS
CA-OPTIMIZER
CaseQMS
COHESION Team/SEE
CustomQA
DecisionVision 1 (DV1)
Defect Control System (DCS)
Distributed Defect Tracking System (DDTs)
DOSSIER PROVE
Dr. Taylor's Test (Ghost)
FOR_STUDY
Legacy Workbench
Metrics Analysis and Reporting System (MARS)
Metrics4Project
MicroSTEP
Online Session Capture and Replay (OSCAR)
Problem Alert System (PAS)
QA Administer
QA C
QA C++
QA FORTRAN
QA Process Control Manager (QA PCM)
QA/S
QualGen
QualityTEAM
SEER
Software Quality Analysis Module
SQA TeamTest
SyncTrac
TREESOFT
Vermont HighTest
Vitro Automated Structured Testing Tool (VASTT)

Emulator

Call the STSC for a current list of emulators.

Network Analyzer

Call the STSC for a current list of network analyzers.

Performance/Timing Analyzer

Ada Analyzer
AdaRAID
AdaTEST
AdaTune
ADAXPA
ADW/Pinpoint
Allegro Composer Development Environment
AnacatAPMPower
AutoAnalyzer
Automated Test Facility (ATF)
AutoTester for Windows
AutoTester Plus
BBN/Catalyst Software
Business BenchMark
CA-OPTIMIZER
CheckIt PRO:Analyst
CLAS 2000
CRYSTAL
DECset
Dr. Taylor's Test (Ghost)
Dynamic Load Balancer (DLB)
Eclipse 29K
Express 960
Fortran Utility System
FPT
Hindsight
HP AxAda Programming Support Environment
InnerVue
LoadRunner
Micro Focus COBOL/2 for UNIX
Micro Focus Toolbox for UNIX
Micro Focus Workbench
Microsoft Source Profiler
Microtec Cross Development Tools
MICS MVS Performance Manager
Monitor/Plus
NightTrace
Panorama C++
Pascal+
Pascal-2 Development System
perfmeter
perfmon
Performance Coverage Analyzer (PCA)
pixie
preVue
preVue-X
PROBLEM PROGRAM EVALUATION (PPE)
PSS ADA/JOVIAL 1750A SUPPORT TOOLS
QAPlus
Quantify
QUARTZ Remote Terminal Emulator
QUEMAN
Remote Terminal Emulator(RTE)Safe C Runtime Analyzer
SAS System
SimCASE - Simulator/Debugger (SimCASE)
SmallTalk-80
STATUS
STROBE
TD2000
TestPoint
time
TrackDeck
TREESOFT
V-TEST
V-TIMER
Variable Value Monitor (VVM-1)
VAX Performance Advisor (VPA)
VAXset/Program Design Facility (VAXset/PDF)
Vermont HighTest
ViewPoint
vtimes
Watcom C 32 for DOS
WinScope
Xaminer

Requirements-Based Test Case Generator

Ada Type Interchange Generator
DesignGen
Ensemble
QES/Architect
Requirements and Traceability Management (RTM)
SOFTTEST
StP/T
T
Teamwork/TestCase

Run-Time Error Checker

ADAXPA
Advanced Debugging System (ADS)
Automated Documentation System (ADS)
Bounds-Checker
CA-EZTEST/CICS
CA-InterTest
CA-OPTIMIZER
CheckIt LAN
CLAS 2000
MicroSTEP
NET-Check
NLM-Check
Pascal+

Run-Time Error Checker (continued)

PLASMA
Purify
QAPlus
Quantify
Run Time Debugger
Safe C Runtime Analyzer
Soft-ICE
TestCenter
TestPoint
TestRunner
VADSWorks
VIA/SmartTest

Simulator

Call the STSC for a current list of simulators.

Size Measurer

Ada Measurement and Analysis Tool (AdaMAT)
Ada Software Development Toolset
AdaQuest
AdaTEST
ADW/Inspector
Amadeus
ARC SADCA
AutoAnalyzer
Battlemap Analysis Tool (BAT)
C Design and Documentation Language (CDADL)
C-DOC
C-METRIC
CA-FPXpert
CA-METRICS
CANTATA
CCount
Checkpoint
COBOL Analyst
COBOL/METRICS
CodeCheck
Complexity Measures Tool (CMT)
DATRIX
DecisionVision 1 (DV1)
Enforcer I
Enforcer II
ES RE/Vision
ESW Profile Analysis (VIA/Recap)
Excelerator for Design Recovery
FCount
FIRSTCASE
GrafBrowse
Hindsight
J73 Automated Verification System (J73AVS)
JOVIAL Analysis and Conversion Kit (JACK)
JOVIAL Source Code Review and Metrics (J-SCRAM)
Legacy Workbench
Logiscope
Metrics Analysis and Reporting System (MARS)
Metrics Generator (METRC)
Metrics Manager (M M)
Metrics4C
Metrics4Fortran
Metrics4Pascal
Panorama C
Panorama C++
PC-METRIC
Productivity Manager
QualGen
SEER
size
Size Planner
Software Quality Analysis Module
SPQR SIZER/FP Function Point Calculator (SIZER/FP)
SPQR/20 Estimator (SPQR/20)
STW/Advisor
UX-METRIC
Vitro Automated Structured Testing Tool (VASTT)

Status Displayer/Session Documenter

Call the STSC for a current list of status displayers/session documenters.

Structure Checker

Ada Analyzer
Ada Software Development Toolset
AdaProbe/ICE
AdaQuest
Apex
Application Browser
ARC SADCA
Architecture Design & Assessment System (Adas)
AsmFlow Professional
AutoAnalyzer
AutoDiagrammer
AutoFlow

Structure Checker (continued)

Automated Documentation System (ADS)
AutoStructureChart
Battlemap Analysis Tool (BAT)BugFinder/Ada
C Design and Documentation Language (CDADL)
C Source Analyzer
C-CALL
C-DOC
C-Vision for C
CA-COBOLVISION/Analyzer
CA-OPTIMIZER
CANTATA
CARDtools (CARDtools)
CLEAR Plus
COBOL Analyst
COBOL Magic
COBOL/METRICS
CodeBreaker
CONVERSION ENGINE
CPR
ctrace
DCD III
DEC FUSE
DEC FUSE Call Graph Browser
DecisionVision 1 (DV1)
Documentation-Aid, MVS (Doc-Aid)
Eagle
Enforcer I
Enforcer II
Ensemble
ES RE/Vision
ESW Testing
Excelerator for Design Recovery
Excell 930
Existing Systems Workbench
Expert Debugging Software Assistant (EDSA)
F-SCAN
FORCE
FORCHECK
FORTRAN Reverse Eng & Document System (FREDoc)
FORWARN
FOR_STRUCT
Foundation Vista10
gprof
Hindsight
Insight
IntegrAda
J73 Automated Verification System (J73AVS)
JOVIAL IPSE (JIPSE)
JOVIAL Reverse Engineering Toolset (JRETS)
JOVIAL System Documentor (JSD)
Legacy Workbench
lint
Lisp Object-Oriented Programming System (LOOPS)
Logiscope
Logiscope Graphical Editor
MALPAS
McCabe Instrumentation Tool
McCabe Slice Tool
Medley Development Environment (Medley)
Metrics Generator (METRC)
Micro Focus Cobol/2 Workbench
Micro Focus Toolbox for UNIX
Microtec Cross Development Tools
MULTI
ObjectCenter
Objective-C
Open ACCLIM8
PACREVERSE
Panorama C
Panorama C++
Panorama C++/OO-Browser
Panorama C++/OO-Diagrammer
PATHVU
PLASMA
PRODOC re/NuSys Workbench
Q/AUDITOR PL/I
Q/AUDITOR PL/I PC
QA C
QA C++
QA FORTRAN
QualityFirst C
RE-DOC
RE-SPEC
REENgineering Environment and Workbench (REENEW)
REFINE/Ada
REFINE/C
REFINE/COBOL
REFINE/FORTRAN
RXVP80
SCAN/COBOL
SE/One
SEER
Slice Tool
Software One Exchange
Software through Pictures (StP)
Source/RE
Structure & Logic Analysis Module
STW/Coverage
Teamwork/Ada
TESTBED
UX-METRIC
VAX Source Code Analyzer (SCA)
VIA/ALLIANCE
VIA/Insight
VIA/Renaissance
VIA/SmartDoc
VIA/SmartEdit
Visible Analyst Workbench (VAW)
VS FORTRAN Complier/Library/Debug
X-ANALYSIS
XAda
XRAY Source Explorer

Syntax & Semantics Analyzer

ACCENT R
Ada Measurement and Analysis Tool (AdaMAT)
ADANON
AdaReVu
AdaTEST
AdaVerify
ADW/Pinpoint
AsmFlow Professional

Syntax & Semantics Analyzer (continued)

Auto V&V/Ada
C->it (see.it)
C/ANALYST
C3Ada Symbolic Debugger
CA-OPTIMIZER
CANTATA
CMS-2 Design Analyzer (DESAN)
COBOL Analyst
COBOL STANDARDS ANALYZER
COBOL-lint
CodeCheck
CONVERSION ENGINE
DATATEC
DCD III
DEC FUSE
DECset
DOSSIER BROWSE
ESW Code Change
Excelerator for Design Recovery
Expert Debugging Software Assistant (EDSA)
F-SCAN
FlexeLint
FORCE
FORCHECK
FORTRAN VERIFIER
FORTRAN-lint
FORWARN
GPSA
Hindsight
HP Softbench
Instant-C
Intek C++
InterCASE KnowledgeWare Gateway
JOVIAL Source Code Review and Metrics (J-SCRAM)
JOVIAL System Documentor
lint
lint-PLUS
MALPAS
MAX Macro Assembler (MAX)
Open ACCLIM8
Panorama C
Panorama C++
Panorama C++/OO-Analyzer
PC-Lint
PCYACC
PLASMA
plusFORT
PRODOC re/NuSys Workbench
prof
QA C
QA C++
QA FORTRAN
QualGen
REFINE/Ada
REFINE/C
REFINE/COBOL
REFINE/FORTRAN
RXVP80
SCAN/COBOL
SE/One
SMARTcheck
SMARTsystem
Software One Exchange
SQLASSIST
Static Analysis Tool Set (SATS)
STW/Advisor
TAGS Case2
TESTBED
VAX Language Sensitive Editor (LSE)
VAX Source Code Analyzer (SCA)
VIA/SmartEdit
VS FORTRAN Complier/Library/Debug
XAda

Test Data Generator

Call the STSC for a current list of test data generators.

Test Execution Manager

AccuTest
Ad/Vantage.DM*
Ada Design and Documentation Language (ADADL)
AdaCAST
AdaTEST
Anacat
ANSWER:Testpro for DOS
Application Testing Facility (ATF)
Automated Software Test Facility
Automated Test Facility (ATF)
Automator QA
Automator QA (Windows Edition)
Automator QA with Navigator
AutoTester
AutoTester For OS/2
AutoTester for Windows
AutoTester Plus
Business BenchMark
BUSTER Test Management System
CA-TRAPS
CA-VERIFY
CANTATA
Compuware Solution Set
CPR
Cross System Product (CSP)
CustomQA
DEC/Test Manager (DTM)
DECset
Dr. Taylor's Test (Ghost)
Evaluator
FERRETT
Hiperstation
Hiperstation MP (HS/MP)
LoadRunner
Metrics4C
Metrics4Fortran
Micro Focus Cobol/2 Workbench

Test Execution Manager (Continued)

Micro Focus Workbench
Perennial Driver/Monitor
PISCES-Software Testability Analysis
PLAYBACK
QES/Manager
RealTime Testware (RT)
Remote Terminal Emulator (RTE)
SEDIT.DB
SEDIT.MVS
SOFTTEST
Software Analysis Test Tool
SQA TeamTest
STW/Regression
TBGEN
Test/Cycle
TESTBED
TestBench.DM*
TestCenter
TestGen
TestMate
TestRunner
TREESOFT
UNISET
V-TEST
VAXset/Program Design Facility (VAXset/PDF)
Vermont HighTest
VIA/SmartTest
Visual COBOL
WinRunner
Workstation Interactive Test Tool (WITT)
XRunner

Test Planner

Call the STSC for a current list of test planners.

Validation Suite

Call the STSC for a current list of validation suites.

Appendix B: STSC Product Critique System

In the December 1992 issue of *CROSSTALK*, the STSC published "Product Critiques Revisited," which discusses the STSC's Product Critique System. Sections B.1 through B.3 are a reprint of that article. Section B.3 contains a blank product critique. Completed product critiques for a number of software tools can be obtained by contacting the STSC.

B.1 Product Critique Concepts

Selecting the right software products to improve your software development process can incorporate hundreds of criteria. We use the term *technology* in the broad sense to include processes, methods, techniques, tools, tool sets, and environments. It is easy for engineers to get wrapped up in detailed evaluations of software products by listing criteria, setting up an evaluation matrix, developing a scoring scheme, determining weighting factors, and so forth. This is not wrong; detailed evaluations are essential once your options have been narrowed down to a manageable size. Yet, we often overlook the value of a less quantitative approach of collecting testimonials or critiques from experienced users to narrow those options.

When you buy a car, it is useful to talk with friends, relatives, and neighbors who own the same models you are considering. You want to leverage off both their good and bad experiences to narrow your choices and reaffirm your selection. Once your choices have been reduced, you can use evaluations, specifications, additional options, and test drives to select a car to buy.

Selecting a software technology is no different, except that most friends, relatives, and neighbors lack the experience you need. The STSC is facilitating the exchange of tool experiences with the product critique form, which you will find in Section B.3. If you are an experienced user of a particular software product, please take a few minutes to share your experience by filling in this form and mailing or faxing it to the STSC. Make copies of the blank form as needed for each product to be critiqued.

The goals of the STSC Product Critique System are

- To convey actual experiences of product users to potential product buyers.
- To help consumers of software technology reduce their candidate lists effectively and at low cost.
- To provide software product developers with constructive criticism from users about the strengths and weaknesses of their products, particularly requirements analysis and

design, testing, reengineering, documentation, reuse, project management, project estimation, and software engineering environment products.

- To complement or summarize quantitative evaluations for use in the final selection of software technologies.

Note that the STSC emphasizes the importance of selecting a sound software development or maintenance methodology before selecting a software product to automate that methodology. Some products have a built-in methodology that will require some user training before the tool can be used effectively.

B.2 Product Critique Instructions

Every entry of the product critique should be brief and basically cover the issues of ease of use, power, robustness, functionality, ease of insertion, and quality of vendor support [FIRT87]. The intent is to capture your impressions of the product rather than have you list the tool's features. Most of the blocks and fields are self-explanatory, but some additional explanations on the following fields may be helpful:

a. **Operating Environment.** Describe the main components (hardware and software) that make up the system, particularly those parts of which the product is dependent for proper utilization. Include memory and disk requirements.

b. **Project Description.** Describe unclassified details about the project that would help product critique readers to better understand the technology's application in your environment.

c. **Keep name and company confidential.** Circle "Y" or "N" to indicate whether or not you would be willing to have other potential tool buyers or vendors call you for further information.

d. **Will you use this product on your next project? Do you prefer another product?** These are essentially bottom-line questions about your opinion of the technology. Enter supporting information in the blocks for strengths and weaknesses. Enter the name of the preferred product in the advice block.

e. **Notable Strengths of this Product.** Describe notable features and performance characteristics that make the technology indispensable or better than other technologies with similar features. Cite specific examples that helped you form your impressions.

f. **Notable Weaknesses of this Product.** Describe annoying problems or deficiencies that reduce the technology's effectiveness.

g. **Advice for Potential Users or Buyers of this Product.** This block provides information (not necessarily good or bad) that is important for a potential buyer; for example, you could write, "It is essential to use an accelerator card and a 20-inch color monitor."

h. **Vendor Comments.** The product reviewer does *not* complete this block. The vendor will be given the opportunity to respond to the strengths and weaknesses identified by the reviewer.

If you are interested in using STSC product critiques to help you select software products, please contact the STSC directly.

B.3 Blank Product Critique

The next page contains a blank product critique form. Make copies of this form as needed for product critiques.

PRODUCT CRITIQUE

Product Name:
Vendor Name:
Special Operating Environment:

Version Number:
Hardware Platform:
Operating System:

Reviewer's Name:
Company/Organization:
Address:

Position/Title:
Office/Group:
Reviewer's Duties:

Phone:
Fax:
E-mail:

Project Description:

Years of software experience:
Years of experience with product:
Last time tool was used:
Keep name and company confidential? (Y/N)
Will you use this product on your next project? (Y/N)

Overall Impression of this Product:
Excellent Good Fair Poor

Quality of Vendor Support:
Excellent Good Fair Poor Unknown

Do you prefer another product? (Y/N)

Notable Strengths of this Product:

Notable Weaknesses of this Product:

Advice for Potential Users or Buyers of this Product:

Vendor Comments:

The intent of this critique is to capture *your* impressions of a software technology, which could include a process, method, technique, tool, or integrated tool set. Note that the Strengths, Weaknesses, and Advice blocks are free-form. The comments should be concise, but we encourage the use of extra pages as needed to convey your impressions. Rather than listing all of the product's features and problems, please describe notable strengths that make the product indispensable and notable weaknesses that reduce the product's effectiveness. Cite specific examples that helped you form your impressions. In the Advice block, note important information that a potential buyer of this product should know. The vendor will complete the Vendor Comments block.

Please send this form to: OO-ALC/TISE, 7278 Fourth St. Hill AFB, UT 84056-5205 Phone: DSN 458-7703 801-777-7703 FAX: DSN 458-8069 801-777-8069

STSC Version 3.0b

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Appendix C: References

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Appendix D: Testing Conferences and Seminars

Sponsor / Phone	Conference
ACM SIGAda 510-814-1775 / 719-590-5224	TRI-ADA
ACM SIGSOFT 413-545-2742 / 310-822-1511	Annual ACM SIGSOFT Symposium on the Foundations of Software Engineering
Advanced Information Technologies 800-882-8684	Systems Testing and Quality Assurance Techniques
AT&T Lab 800-282-2828	Software Reliability Engineering Application Workshop
Bender & Associates 415-924-9196	CASE WORLD – The National Application and Development Conference
Berard Software Engineering 301-417-9884	Testing of Object-Oriented Software (TOOS)
Computer Resources & Engineering Office 205-955-1995	Annual Software Engineering Symposium/Test Tools
Data-Tech Institute 201-478-5400 ext 229	Improving the Software Testing Process
Digital Consulting, Inc. 508-470-3880	Applied Software Measurement (ASM) with Capers Jones
Digital Consulting, Inc. 508-470-3880	Improving Software Quality
Digital Consulting, Inc. 508-470-3880	JAD: Commitment and Quality Through Consensus
Digital Consulting Inc. 508-470-3880	National Software Reengineering and Maintenance Conference
Educational Foundation Data Processing Management Association (EFDPMA) 201-284-2946	Automated Software Test and Evaluation Conference
Educational Foundation Data Processing Management Association (EFDPMA) 201-284-2946	Software Process Improvement & Automation
Fastrak Training Inc. 800-488-2321	Software Quality Assurance
George Washington University 408-265-1960 / 800-424-9773	Assessment of Quality Software Development Tools Symposium
George Washington University 408-265-1960 / 800-424-9773	Software Verification and Validation

Sponsor / Phone	Conference
IEEE Aerospace and Electronic Systems Society 513-237-7971	Automatic Testing Conference
IEEE Aerospace and Electronics Systems Society 703-734-5611	COMPASS, Annual Conference on Computer Assurance
IEEE Computer Society 919-515-7146	Software Reliability Engineering
IEEE Computer Society, SMA, ACM 301-572-3815	Conference on Software Maintenance
IEEE Computer Society & Technical Committee 408-265-1960	Assessment of Quality Software Development Tools Symposium
IEEE Computer Society & Technical Committee 216-368-2802	International Conference on Software Maintenance and Tools Fair
IEEE Computer Society & Technical Committee 919-515-7886	International Symposium on Software Reliability Engineering
IEEE Computer Society & Technical Committee 415-723-1451	Pacific Test Workshop
IEEE Philadelphia Section 814-941-4666	International Test Conference
IEEE Reliability Society 303-673-6223	International Software Reliability Engineering Conference
IEEE Reliability Society Denver Chapter 303-492-8118	Software Reliability Symposium
International Test and Evaluation Association 703-631-6220	Annual Conference and Exposition on Testing Computer Software
International Test and Evaluation Association 703-631-6220	Annual Test Technology Transfer Symposium
Learning Group International 800-843-8733	Software Quality and Testing Seminar
McCabe & Associates 800-638-6316	Reverse Engineering/Structured Maintenance
National Institute for Software Quality & Productivity 301-983-3295	TQM for Software
Pacific Northwest Software Quality Conference 503-223-8633	Pacific Northwest Software Quality Conference

Sponsor / Phone	Conference
Portland State University 503-690-1460	Annual Oregon Workshop on Software Metrics (AOWSM)
Purdue University, Division of Conferences 317-494-7231	Workshop on Issues in Software Reliability and Testing
Quality Assurance Institute 407-363-1111	International Conference on Software Testing
SIGS Conference 212-274-9135	Object Expo – The National Conference & Exposition
Society for Software Quality 619-297-1544, Ext. 3005	Achieving Software Quality, Annual Debate
Software Association of Oregon (SAO) 503-520-1977	Northwest Software Engineering Tools Fair
Software Engineering Institute 412-268-7388	Software Engineering Symposium
Software Engineering Institute 412-268-7388	Software Capability Evaluation Overview Seminar
Software Engineering Institute 412-268-7388	Engineering an Effective Software Measurement Program
Software Productivity Research 617-273-0140	Function Point Analysis Workshop (through Digital Consulting)
Software Quality Engineering 904-268-8639	Applications of Software Measurement
Software Quality Engineering 800-423-8378	International Conference on Applications of Software Measurement (ASM)
Software Quality Engineering 800-423-8378	European International Conference on Software Testing, Analysis & Review (EuroSTAR)
Software Quality Engineering 800-423-8378	Software Quality Engineering Weeks
Software Quality Engineering 800-423-8378	Software Measurement Seminar
Software Quality Engineering 800-423-8378	Software Testing, Analysis & Review (STAR) Conference
Software Quality Engineering 800-423-8378	Systematic Software Testing Seminar
Software Quality Engineering 904-268-8639	Reliability Growth Testing

Sponsor / Phone	Conference
Software Quality Engineering 904-268-8639	Software Measurement
Software Quality Engineering 904-268-8639	Technical Review Inspections (TRI)
Software Quality Engineering 904-268-8639	Test Automation Workshop
Software Research, Inc. 800-942-7638	Software Test Automation Seminar
Software Research, Inc. 800-942-7638	International Software Quality Week
Software Technology Support Center (STSC) 801-777-7411	Annual Software Technology Conference
System Quality Consultants, Inc. 619-697-0085	Formal Software Inspections
System Quality Consultants, Inc 702-922-0202	Software Quality Assurance
System Quality Consultants, Inc. 702-922-0202	Software Testing Seminar
Technology Transfer Institute 310-394-8305	Software Inspection Leadership
Technology Transfer Institute 310-394-8305	Software Quality Management
Univ. California at Berkeley 510-642-4111	Advanced Software Engineering/Software Testing
Univ. California at Berkeley 510-642-6117	Software Testing and Quality Assurance Seminar
Univ. of Washington 206-543-5539	Usability Testing of the Documentation and User Interface of Computer Systems
U.S. Army Test & Evaluation Command 410-278-1478	Test Technical Symposium
U.S. Naval Post Graduate School 408-656-2719	International Symposium on Software Reliability Engineering
U.S. Professional Development Institute 301-445-4405	Lifecycle Software Quality Assurance Seminar

Sponsor / Phone	Conference
U.S. Professional Development Institute 301-445-4405	Software Quality Assurance in Government
U.S. Professional Development Institute 301-445-4405	Software Testing: An Integrated Approach
U.S. Professional Development Institute 301-445-4405	Software Testing in Government
U.S. Professional Development Institute 301-445-4405	Test Case Design
U.S. Professional Development Institute 301-445-4405	International Testing Computer Software
Wright Labs 513-255-2446	Test Facility Working Group Conference

Appendix E: Glossary

Acceptance Testing — Formal testing conducted to determine whether or not a system satisfies its acceptance criteria – enables a customer to determine whether or not to accept the system [YOUN89].

Algorithmic Test Case Generation — A computational method for identifying test cases from data, logical relationships, or other software requirements information.

Alpha Testing — Testing of a software product or system conducted at the developer's site by the customer [YOUN89].

APSE — Ada Programming Support Environment.

Automated Testing — That part of software testing that is assisted with software tool(s) that does not require operator input, analysis, or evaluation.

Beta Testing — Testing conducted at one or more customer sites by the end-user of a delivered software product or system [YOUN89].

Black-Box Testing — Functional testing based on requirements with no knowledge of the internal program structure or data. Also known as closed-box testing.

Bottom-Up Testing — An integration testing technique that tests the low-level components first using test drivers for those components that have not yet been developed to call the low-level components for test.

Boundary Value Analysis — A test data selection technique in which values are chosen to lie along data extremes. Boundary values include maximum, minimum, just inside/outside boundaries, typical values, and error values [MYER79].

Branch Coverage Testing — A test method satisfying coverage criteria that requires each decision point at each possible branch to be executed at least once [IEEE83].

CASE — Computer-Aided (or Computer-Assisted) Software Engineering consists of the automated capability to implement the discipline of software engineering within a lifecycle phase or across multiple lifecycle phases.

CAST — Computer-Aided Software Testing consists of the automated capability to implement software testing functions within a lifecycle phase or across multiple lifecycle phases.

Cause-Effect Graphing — A testing technique that aids in selecting, in a systematic way, a high-yield set of test cases that logically relates causes to effects to produce test cases. It has a beneficial side effect in pointing out incompleteness and ambiguities in specifications [MYER79].

Clear-Box Testing — Another term for white-box testing. Structural testing is sometimes referred to as clear-box testing since "white-boxes" are considered opaque and do not really permit visibility into the code. Also known as glass-box or open-box testing.

Cyclomatic Complexity — A measure of the number of linearly independent paths through a program module [MCCA89].

Data Flow Analysis — Consists of the graphical analysis of collections of (sequential) data definitions and reference patterns to determine constraints that can be placed on data values at various points of executing the source program [YOUN89].

Debugging — The act of attempting to determine the cause of the symptoms of malfunctions detected by testing or by frenzied user complaints [BEIZ90].

Defect — (1) A manifestation of an error made by a software developer [IDA92]. (2) An error made by a software developer that can appear in code or documentation.

Defect Analysis — Using defects as data for continuous quality improvement. Defect analysis generally seeks to classify defects into categories and identify possible causes in order to direct process improvement efforts.

Defect Density — Ratio of the number of defects to program length (a relative number).

Desk Checking — A form of manual static analysis usually performed by the originator. Source code documentation, etc., is visually checked against requirements and standards [PRIC94].

DT&E — Developmental Test and Evaluation focuses on the technological and engineering aspects of the system or equipment items [DACS79].

Dynamic Analysis — The process of evaluating a program based on execution of that program [IEEE83]. Dynamic analysis approaches rely on executing a piece of software with selected test data.

Equivalency Class Partitioning — A testing technique that involves identifying a finite set of representative input values that invoke as many different input conditions as possible [MYER79].

Error — (1) A discrepancy between a computed, observed, or measured value or condition and the true, specified, or theoretically correct value or condition [IEEE83], and (2) A mental mistake made by a programmer that may result in a program fault [YOUN89].

Error-Based Testing — Testing where information about programming style, error-prone language constructs, and other programming knowledge is applied to select test data capable of detecting faults, either a specified class of faults or all possible faults [YOUN89].

Essential Complexity — A measure of the level of "structuredness" of a program [MCCA89].

Evaluation The process of examining a system or system component to determine the extent to which specified properties are present [YOUN89].

Execution The process of carrying out an instruction or the instructions of a computer program by a computer [IEEE83].

Exhaustive Testing Executing the program with all possible combinations of values for program variables [ADRI82].

Failure The inability of a system or system component to perform a required function within specified limits. A failure may be produced when a fault is encountered [IEEE83].

Failure-Directed Testing Testing based on the knowledge of the types of errors made in the past that are likely for the system under test.

Fault A manifestation of an error in software. A fault, if encountered, may cause a failure [IEEE83].

Fault-Based Testing Testing that employs a test data selection strategy designed to generate test data capable of demonstrating the absence of a set of pre-specified faults; typically, frequently occurring faults [YOUN89].

Fault Tree Analysis A form of safety analysis that assesses hardware safety to provide failure statistics and sensitivity analyses that indicate the possible effect of critical failures [YOUN89].

Formal Review Formal reviews are technical reviews conducted with the customer including the types of reviews called for in DOD-STD-2167A (Preliminary Design Review, Critical Design Review, etc.)

Functional Testing Application of test data derived from the specified functional requirements without regard to the final program structure [ADRI82]. Also known as black-box testing.

Function Points A consistent measure of software size based on user requirements. Data components include: inputs, outputs, etc. Environment characteristics include: data communications, performance, reusability, operational ease, etc. Weight scale: 0 – not present, 1 – minor influence, 5 – strong influence.

Heuristics Testing Another term for failure-directed testing.

Hybrid Testing A combination of top-down testing combined with bottom-up testing of prioritized or available components.

Incremental Analysis Incremental analysis occurs when (partial) analysis may be performed on an incomplete product to allow early feedback on the development of that product [YOUN89].

Infeasible Path Program statements sequence that can never be executed [ADRI82].

Inspection — A formal evaluation technique in which software requirements, design, or code are examined in detail by a person or group other than the author to detect faults, violations of development standards, and other problems [IEEE83]. A quality improvement process for written material that consists of two dominant components: product (document) improvement and process improvement (document production and inspection) [GILB93].

Instrument — To install or insert devices or instructions into hardware or software to monitor the operation of a system or component [PRIC94].

Integration — The process of combining software components or hardware components or both into an overall system.

Integration Testing — An orderly progression of testing in which software components or hardware components or both are combined and tested until the entire system has been integrated.

Interface — A shared boundary. An interface might be a hardware component to link two devices, or it might be a portion of storage or registers accessed by two or more computer programs [IEEE83].

Interface Analysis — Checks the interfaces between program elements for consistency and adherence to predefined rules or axioms [YOUN89].

Intrusive Testing — Testing that collects timing and processing information during program execution that may change the behavior of the software from its behavior in a real environment. Usually involves additional code embedded in the software being tested or additional processes running concurrently with software being tested on the same platform.

IOT&E — Initial Operational Test and Evaluation is the first phase of operational test and evaluation conducted on pre-protectional items, prototypes, or pilot production items and normally completed prior to the first major production decision. Conducted to provide a valid estimate of expected system operational effectiveness and suitability [YOUN89].

IV&V — Independent Verification and Validation is the verification and validation of a software product by an organization that is both technically and managerially separate from the organization responsible for developing the product [IEEE83].

Lifecycle — The period that starts when a software product is conceived and ends when the product is no longer available for use. The software lifecycle typically includes a requirements phase, design phase, implementation (code) phase, test phase, installation and checkout phase, operation and maintenance phase, and a retirement phase [IEEE83].

Maintenance The modification of a software product, after delivery, to correct faults, to improve performance or other attributes, or to adapt the product to a changed environment.

Manual Testing That part of software testing that requires operator input, analysis, or evaluation.

Measure To ascertain or appraise by comparing to a standard; to apply a metric [IEEE83].

Measurement (1) The act or process of measuring. (2) A figure, extent, or amount obtained by measuring [IEEE83].

Metric A measure of the extent or degree to which a product possesses and exhibits a certain quality, property, or attribute [IEEE83].

Mutation Testing A method to determine test set thoroughness by measuring the extent to which a test set can discriminate the program from slight variants of the program [ADRI82].

Nonintrusive Testing Testing that is transparent to the software under test, i.e., testing that does not change the timing or processing characteristics of the software under test from its behavior in a real environment. Usually involves additional hardware that collects timing or processing information and processes that information on another platform.

Operational Requirements Operational requirements are qualitative and quantitative parameters that specify the desired operational capabilities of a system and serve as a basis for determining the operational effectiveness and suitability of a system prior to deployment [YOUN89].

Operational Testing Testing performed by the end-user on software in its normal operating environment (DoD usage) [IEEE83].

OT&E Operational Test and Evaluation is formal testing conducted prior to deployment to evaluate the operational effectiveness and suitability of the system with respect to its mission [YOUN89].

Outside-In Testing A strategy for integration testing where units handling program inputs and outputs are tested first, and units that process the inputs to produce output being incrementally included as the system is integrated [YOUN89]. A form of hybrid testing.

Path Analysis Program analysis performed to identify all possible paths through a program, to detect incomplete paths, or to discover portions of the program that are not on any path [IEEE83].

Path Coverage Testing A test method satisfying coverage criteria that each logical path through the program be tested. Paths through the program often are grouped into a finite set of classes; one path from each class is tested [ADRI82].

Peer Reviews — Peer reviews involve a methodical examination of software work products by the producer's peers to identify defects and areas where changes are needed [PAUL93].

Proof Checker — A program that checks formal proofs of program properties for logical correctness [YOUN89].

Prototyping — Prototyping evaluates requirements or designs at the conceptualization phase, the requirements analysis phase, or the design phase by quickly building scaled-down components of the intended system to obtain rapid feedback of analysis and design decisions.

Qualification Testing — Formal testing, usually conducted by the developer for the customer, to demonstrate that the software meets its specified requirements [YOUN89].

Quality — The degree to which a program possesses a desired combination of attributes that enable it to perform its specified end use [YOUN89].

Random Testing — An essentially black-box testing approach in which a program is tested by randomly choosing a subset of all possible input values. The distribution may be arbitrary or may attempt to accurately reflect the distribution of inputs in the application environment [YOUN89].

Regression Testing — Selective retesting to detect faults introduced during modification of a system or system component, to verify that modifications have not caused unintended adverse effects, or to verify that a modified system or system component still meets its specified requirements [IEEE83].

Reliability — The probability of failure-free operation for a specified period.

Review — A review is a way to use the diversity and power of a group of people to point out needed improvements in a product or confirm those parts of a product in which improvement is either not desired or not needed [FREE90]. A review is a general work product evaluation technique that includes desk checking, walkthroughs, technical reviews, peer reviews, formal reviews, and inspections.

Semantics — (1) The relationship of characters or group of characters to their meanings, independent of the manner of their interpretation and use. (2) The relationships between symbols and their meanings [IEEE83].

Software Engineering Environment — A Software Engineering Environment (SEE) is a harmonious collection of tools that provides automated support for a software engineering system that includes all of the processes, methods, tools, information, and people an organization uses to do software engineering [SEE94].

Software Tool — A computer program used to help develop, test, analyze, or maintain another computer program or its documentation; for example,

automated design tools, compilers, test tools, and maintenance tools [IEEE83].

Statement Coverage Testing — A test method satisfying coverage criteria that requires each statement be executed at least once.

Static Analysis — The process of evaluating a program without executing the program [IEEE83].

Structural Coverage — Structural coverage requires that each pair of module invocations be executed at least once.

Structural Testing — A testing method where the test data are derived solely from the program structure [ADRI82].

Stub — A software component that usually minimally simulates the actions of called components that have not yet been integrated during top-down testing.

Syntax — Syntax is (1) the relationship among characters or groups of characters independent of their meanings or the manner of their interpretation and use, (2) the structure of expressions in a language, and (3) the rules governing the structure of the language [IEEE83].

System — A collection of people, machines, and methods organized to accomplish a set of specified functions [IEEE83].

System Simulation — Another term for prototyping.

System Testing — The process of testing an integrated hardware and software system to verify that the system meets its specified requirements [IEEE83].

Technical Review — A technical review is a review that refers to content of the technical material being reviewed [FREE90].

Test Bed — (1) An environment that contains the integral hardware, instrumentation, simulators, software tools, and other support elements needed to conduct a test of a logically or physically separate component. (2) A suite of test programs used in conducting the test of a component or system [PRIC94].

Test Case — The definition of "test case" differs from company to company, engineer to engineer, and even project to project. A test case usually includes an identified set of information about observable states, conditions, events, and data including inputs and expected outputs.

Test Development — The development of anything required to conduct testing. This may include test requirements (objectives), strategies, processes, plans, software, procedures, cases, documentation, etc. [PRIC94].

Test Driver (1) A software component that as a rule minimally simulates the actions of high-level components that have not yet been integrated during bottom-up testing. (2) Another term for test harness.

Test Executive Another term for test harness.

Test Harness A software tool that enables the testing of software components that links test capabilities to perform specific tests, accept program inputs, simulate missing components, compare actual outputs with expected outputs to determine correctness, and report discrepancies [CLAR91].

Test Plan A formal or informal plan to be followed to assure the controlled testing of the product under test [PRIC94].

Test Procedure The formal or informal procedure that will be followed to execute a test. This is usually a written document that allows others to execute the test with a minimum of training [PRIC94].

Testing Any activity aimed at evaluating an attribute or capability of a program or system to determine that it meets its required results [HETZ88]. The process of exercising or evaluating a system or system component by manual or automated means to verify that it satisfies specified requirements or to identify differences between expected and actual results [IEEE83].

Top-Down Testing An integration testing technique that tests the high-level components first using stubs for lower-level called components that have not yet been integrated and that simulate the required actions of those components.

Unit Testing Unit testing is the testing that we do to show that a unit (the smallest piece of software that can be independently compiled or assembled, loaded, and tested) does not satisfy its functional specification or its implemented structure does not match the intended design structure [BEIZ90].

Validation The process of evaluating software to determine compliance with specified requirements [216788].

Verification The process of evaluating the products of a given software development activity to determine correctness and consistency with respect to the products and standards provided as input to that activity [216788].

Walkthrough In the most usual form of the term, a walkthrough is a step-by-step simulation of the execution of a procedure, as when walking through code, line by line, with an imagined set of inputs. The term has been extended to the review of material that is not procedural, such as data descriptions, reference manuals, specifications, etc. [FREE90].

White-Box Testing Testing approaches that examine the program structure and derive test data from the program logic [YOUN89].